

The Global Newspaper
Printed Simultaneously
in Paris, London, Zurich,
Hong Kong, Singapore,
Tokyo and Marseille

Herald Tribune

Published With The New York Times and The Washington Post

No. 31,581

PARIS, SATURDAY-SUNDAY, SEPTEMBER 1-2, 1984

ESTABLISHED 1887

KAL Flight 007: A Year Later

In Moscow, Continuing Charges That the Plane Was Spying for the U.S.

By Serge Schmemmann
New York Times Service

MOSCOW — The approach of the first anniversary of the Soviet downing of a South Korean jetliner has prompted a flood of articles in the Soviet press arguing the fundamental Soviet defense, that the plane was on a spying mission for the United States.

The bulk of these articles have been drawn from the Western press, probably because that is where most investigations into the incident have been pursued, but also because the Kremlin frequently tries to give its more controversial positions an aura of universality and credibility by citing compatible opinions from abroad.

Thus in recent weeks Zia Rubezhov, a weekly publication of the Union of Writers, has carried entire articles from the British publication Defense Attaché and the American weekly magazine The Nation that argue that the jet could have been on a probing mission into Soviet airspace for U.S. intelligence agencies.

Pravda, the Communist Party newspaper, reported on similar articles in West Germany and Literaturnaya Gazeta cited one in Japan. Radio Moscow carried a report from Brazil of an interview in an Italian newspaper with a former American diplomat who reportedly asserted that the jet was actually blown up by an American bomb derailed by remote control.

The primary purpose of the press campaign, diplomats here say, has been to anticipate the worldwide recollection of the incident on its anniversary on Saturday. But the articles also suggest that the impact of the incident, which brought the Soviet Union under international censure, has not faded away.

The specific assertions and questions repeatedly stressed by the Russians are likely to be debated for some time in the absence of any certain information on what caused Korean Air Lines Flight 007 to take a course over militarily sensitive Soviet territory. Most diplomats here think that if evidence does emerge, it will not come from the Soviet Union, since it is probable that the Russians would have hurriedly made public any information supporting their case.

What the current state of articles does demonstrate is the basic Soviet attitude: that if it can be proved that the Korean plane was on a spying mission, the onus for the

In Washington, a Feeling That the Kremlin Helped Reagan at Home, Abroad

By Bernard Gwertzman
New York Times Service

WASHINGTON — In reviewing the year since a Soviet fighter plane shot down a South Korean jetliner, Reagan administration officials assert, that worldwide criticism of the Soviet handling of the crisis has strengthened the United States in its relations with Moscow.

In interviews in recent days, general agreement was expressed that the lasting impact of the airliner downing, in which 269 people died, had been to tarnish the Soviet image and to make it easier for President Ronald Reagan in dealings with Western allies and at home.

In particular, the officials said, the incident has helped Washington rally the Western alliance at a time of considerable pressure from the Russians not to go ahead with the deployment of U.S. missiles.

The outrage expressed at the time over the downing of Korean Air Lines Flight 007 over Soviet territory, however, provoked a furious reaction in Moscow that made it virtually impossible for any progress to be made toward a summit meeting that had been expected at this time last year. Yuri V. Andropov, the Soviet leader who died in February, issued a statement less than a month after the plane's downing, saying it was impossible to do business with the Reagan administration.

His successor, Konstantin U. Chernenko, has maintained the chilly attitude toward the Reagan administration. But with the exception of Moscow's refusal to resume negotiations on limiting nuclear missiles, the Russians in recent months have agreed to talks and agreements on a slate of less-important issues, such as modernizing the hot line telephone link and new cultural exchanges.

The Korean airliner was shot down on Sept. 1, 1983, as it was leaving Soviet airspace. Flying from Anchorage, Alaska, to Seoul, it was off its regular course, for reasons still not known with certainty. U.S. and Japanese intelligence, going over recorded radio and radar signals, deduced within 12 hours that it had been downed by a Soviet Su-15 fighter, which fired an air-to-air missile.

The Russians, however, did not admit to downing the plane for

A senior White House official said: 'The real significance is that it provided a groundswell of criticism of the Russians here and everywhere that put them on the defensive and gave us some flexibility.'

deaths of 269 people will pass from Moscow to Washington — where the Russians insist it belongs. In the short-hand of Soviet propaganda, the incident is now invariably referred to as the provocation with the use of a South Korean airliner, which was deliberately staged to foment anti-Soviet psychosis and push militarist programs.

The notion that since the plane was allegedly spying it was proper to shoot it down has never been questioned in the Soviet press. Even those Russians who have privately expressed dismay at the large loss of lives have rarely challenged the need for the kind of vigilance over the Soviet Union's borders that the pilot of the Su-15 interceptor demonstrated in shooting down Flight 007.

Western diplomats here say they believe the crisis brought on an

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Shite women attending the commemoration Friday in West Beirut for Imam Musa Sadr.



Shite women attending the commemoration Friday in West Beirut for Imam Musa Sadr.

Shite Moslems Demonstrate in Beirut As Christian and Druze Militias Clash

Reuters

BEIRUT — Scores of Shite Moslem demonstrators paraded through the streets of Moslem-controlled West Beirut on Friday to commemorate the disappearance six years ago of their spiritual leader, Imam Musa Sadr.

In coastal areas of the Kharroub region south of Beirut, Christian residents fled to Israeli-occupied southern Lebanon as heavy overnight clashes broke out between Christian and Druze Moslem forces, security sources said.

Beirut radio reported artillery duels in the area for seven hours Thursday night but said they subsided shortly after dawn.

The rally was called to mark Mr. Sadr's disappearance while on a trip to Tripoli, Libya. Commercial activity in West Beirut and the mainly Moslem south was halted by the demonstration. Gunmen and other marchers waved posters of the missing religious leader.

Shite leaders reject Libyan assertion that he vanished in August 1978 after leaving Tripoli for Rome. The higher Shite council, grouping clerics and prominent political figures, urged the Lebanese government on Thursday to sever diplomatic ties with Libya.

The renewed fighting came only hours after the funeral of Pierre Gemayel, the Christian Phalangist Party leader, who died on Wednesday. In recent months, Mr. Gemayel had lent his support to moves for reforms to give the Moslem majority a greater say in Lebanon's government and end nine years of civil war.

Mr. Gemayel's death aroused fears of a hardening of attitudes by the Christian Lebanese Forces militia, which opposes the reform plans, and the possibility of renewed sectarian strife.

The fighting also follows press reports that the Druze Progressive Socialist Party's militia and the Lebanese Forces were strengthening their positions in the Kharroub area, just north of the Israeli front line at the Awali River, 38 kilometers (24 miles) south of Beirut.

Other artillery clashes were reported in the hills southeast of Beirut on Thursday night, as well as scattered shelling of residential areas in Christian East Beirut.

The leader of the Shite Amal movement, Nabih Berri, a cabinet minister, said Friday that as long as the road was closed, he would oppose a security plan for areas outside Beirut.

Prime Minister Rashid Karami of Lebanon expressed concern Friday over the disappearance of a Reuters correspondent, Jonathan Wright, and asked Lebanese Army and security commanders to intensify the search for him, Reuters reported in Beirut.

Mr. Wright, a 30-year-old Beirut resident, has been missing since setting out Wednesday from Beirut for the eastern Bekaa Valley, Israeli planes had raided Palestinian positions there the previous day.

No Radioactivity Found in Hold Of French Ship

Reuters

ROTTERDAM — New tests have shown no trace of radioactivity in the hold of the sunken French freighter Mont-Louis, clearing the way for the salvage of its nuclear cargo, a Dutch salvage company said Friday.

The tests were the first on water from inside the ship, which sank last Saturday in shallow water off the Belgian coast while carrying 30 barrels of uranium hexafluoride to the Soviet Union.

The tests were made possible after the salvage company, Smit International, drilled holes in the hull Thursday. The holes also released trapped air and allowed the ship to settle firmly on the ocean floor.

An unusually high concentration of fluorine was found in the sea water, said Henk Drenth, a Smit spokesman. But there was no sign of radioactivity, he added.

Peres, Shamir Cite Progress on 50-Month Plan

By James Feron
New York Times Service

JERUSALEM — Shimon Peres and Prime Minister Yitzhak Shamir said Friday they had agreed on a 50-month bipartisan Israeli government but indicated that there was still dissension within the ranks of their respective parties.

"We made... headway, yet our work is not completed; we shall have to continue," Mr. Peres said at a press conference. He added that "there are still one or two items" that he hoped could be resolved "by Sunday or Monday."

Mr. Shamir said he expected an agreement would be completed "very soon." The two men are to meet again Sunday.

Neither Mr. Peres, who heads the Labor alignment, nor Mr. Shamir, representing the rightist Likud bloc, would confirm details of a reported "agreement in principle" broadcast Thursday night by Israeli state radio.

The account, which indicated that Mr. Peres would serve for the first 25 months and then Mr. Shamir would take over, emerged from a meeting of Labor alignment leaders. The sense that it represented an agreement came as a surprise to Likud officials.

Mr. Shamir made that clear after Friday's two-hour private meeting with Mr. Peres.

"None of the conclusions" reached with Mr. Peres "have been consolidated," he said. "And until this morning none of the proposals had the approval of the Labor institutions," referring to the parties within the alignment.

That also applied to Likud factions, Mr. Shamir added, which will not be asked to approve any pact until Sunday. The prime minister said he hoped that no faction would leave his bloc.

According to the radio report and similar accounts in newspapers, Mr. Shamir would serve as deputy prime minister and foreign minister under Mr. Peres's prime ministership, then the men would switch positions for the second 25-month period.

The "grand coalition," as Mr. Peres has called it, would include 24 ministers, 12 from each side. Both Labor and Likud would be able to allocate portfolios to small-party allies, although only with the other side's agreement.

Mr. Peres, in answering questions, reported "headway" in the talks while Mr. Shamir spoke of "some progress." He added that they were close to an agreement.

It was evident that the rival political leaders were ahead of the main-streams of their respective parties in forging the broad coalition that President Chaim Herzog had sought in order to resolve an election impasse.

Labor received 44 seats to Likud's 41 in elections July 23 to Israel's 120-member parliament, the Knesset. The remaining 35 seats were divided among 13 other parties, prompting great difficulties for either major bloc to form a ruling coalition.

Each side tried, however, even as the unity talks progressed, and it was only when they had effectively blocked each other from getting the 61 votes necessary for an absolute majority that the bipartisan government began to take shape.

But the six-member Mapam group, a left-wing faction within the Labor alignment, has said it would not serve in a coalition with Likud, thus possibly undermining Mr. Peres's mandate to form the government, which was based largely on his leadership of the largest parliamentary bloc.

Mr. Shamir was asked Friday if this might be a factor in determining whether the Likud leadership would agree to the reported Peres-Shamir accord. He said it might.

Victor Shervakov, the Mapam leader, said the coalition being formed would represent "a government of national paralysis." But he also said that Mapam would not determine whether to drop out until after the government was formed.

The 50-month term of the government being formed, set to coincide with scheduled elections in 1988, is seen by many as unrealistic, the assumption being that it would collapse under ideological strains long before then.

Mr. Peres and Mr. Shamir have attempted to deal with that problem through a series of policy guidelines that are still under discussion. They would outline how the leaders intend to tackle the economic situation, for example, where there seems to be a measure of agreement, and how they would handle areas where they disagree, such as Jewish settlements in occupied territories.

Although no details have emerged, it is understood that a bipartisan team of experts has agreed on some harsh economic measures to resolve a 400-percent annual inflation rate while also paving the way for continued aid from Washington, where officials

are said to be insisting on an Israeli austerity program.

The two leaders are understood also to have agreed on a policy of withdrawal of Israeli troops from Lebanon and to be willing to invite Jordan to peace talks, although without referring specifically to the Camp David accords, which called for a period of self-rule in the West Bank area before negotiations over sovereignty.

But while Mr. Peres and Mr. Shamir appeared cautiously optimistic that a settlement was imminent, some of their colleagues were less sanguine. Some hard-liners in Likud, reportedly including Deputy Prime Minister David Levy and former Defense Minister Ariel Sharon, are said to be insisting that Mr. Shamir be prime minister first.

Libyans Free 2 of 6 Britons As 'Gesture'

The Associated Press

TRIPOLI, Libya — Colonel Moamer Qadhafi on Friday released two of six Britons detained without charge in Libya. The action was called a "good-will gesture."

George Bush and Douglas Leighton met with reporters shortly after they were freed. Both appeared to be in good health and said they had been treated well.

They were released into the custody of two British members of the European Parliament, Ali Lomas and Richard Balfe.

Justice Minister Muftah Quba said the men had been pardoned of all crimes but declined to say what the charges had been. The two Britons said they planned to fly to London on Sunday.

The release came soon after Ali Houderi, a Foreign Ministry official, offered to release two of the six Britons in a meeting with a visiting delegation of British opposition legislators. Mr. Houderi said he hoped his country could "follow suit in the future" with the rest of the detainees.

The JANA press agency said: "This humanitarian move has a deep meaning whose objective is to show a gesture of good will toward the friendly British people despite the Britons' committing of different crimes."

The gesture appeared to be an attempt by Colonel Qadhafi to smooth relations with Britain after an April 17 shooting in front of the Libyan Embassy in London. Gunfire from inside the embassy killed a policeman and injured 11 Libyans demonstrators.

After an 11-day siege, Britain broke relations and expelled the Libyan Embassy staff.

Five Libyans are awaiting trial in Britain on charges stemming from a bombing campaign in March in London and Manchester that police say was aimed at anti-Qadhafi exiles.

Four lawmakers of Britain's opposition Labor Party, headed by Ron Brown, met in Libya with Colonel Qadhafi and other officials in hopes of visiting the detained Britons at the villa where they were being held.

Mr. Houderi suggested to the legislators that if they waited two days the detainees might be able to join them on a flight to Britain.

"Who knows, you might be able to carry with you the detainees," Mr. Houderi said, adding: "We are not in the business of keeping people in prison."

INSIDE

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BUSINESS/FINANCE
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MONDAY

Koreans in Japan are facing discrimination in jobs, housing and social programs as well as deep divisions within their own country.

Two Satellites Are Deployed By Discovery

By Lee Dye
Los Angeles Times Service

HOUSTON — The space shuttle Discovery successfully launched two communications satellites Thursday and early Friday and prepared to deploy its last one on Saturday.

The six-member crew released the first satellite eight hours into the mission, sending it into orbit attached to the same kind of rocket motor that failed in two launches in February.

This time the rocket worked perfectly, propelling the satellite toward a stationary orbit 22,300 miles (36,150 kilometers) high. The device is owned by a private firm, Satellite Business Systems.

The second satellite spun out of the cargo bay early Friday. It will use several days for it to reach the point over the Equator, also 22,300 miles above Earth, to serve as a communications tool for the Defense Department.

That satellite, Syncom IV, was built by the Hughes Space and Communications Group. It is designed to relay military data among land bases, ships and planes. The government has contracted to lease the satellite and three others like it from Hughes.

The crew of the Discovery includes Henry W. Hartsfield Jr., the commander; Michael L. Coats, the pilot; Dr. Judith A. Resnik, a mission specialist and the second American woman in space; two other mission specialists, Dr. Steven A. Hawley and Lieutenant Colonel Richard M. Muliane; and a payload specialist, Charles D. Walker of the McDonnell Douglas Co.

Mr. Walker spent part of the day Friday in Discovery's lower deck operating a refrigerator-sized machine designed to produce large amounts of a hormone for later human testing. McDonnell Douglas has declined to discuss the type of drug involved.

Mr. Walker, the first commercially sponsored astronaut, turned on the machine an hour early after repairing a device designed to remove bubbles from the processing system.

The Discovery was launched from the Kennedy Space Center in Florida on Thursday after liftoff had been delayed three times since June. There were less-severe mechanical problems this time and a

(Continued on Page 2, Col. 5)



Henry W. Hartsfield Jr., the shuttle commander, checks the control panel as the crew prepares to deploy a satellite. Looking on is Dr. Judith A. Resnik, a mission specialist.

A Fast Revives Interest in Jailed U.S. Indian Leader

By E.R. Shipp
New York Times Service

SPRINGFIELD, Missouri — A fast begun in April by a leader of the American Indian Movement has revived interest in a case that has long been championed by human rights activists.

Leonard Peltier, the Indian leader, was one of four men indicted for the 1975 killings of two agents of the Federal Bureau of Investigation in a daylight gunfight at the Pine Ridge Reservation in South Dakota. He alone was convicted, though on the basis of circumstantial evidence.

Mr. Peltier has always said that he is innocent and that he was framed by the FBI, whose only "eyewitness," Myrtle Poor Bear, later recanted and said she had been coerced into saying that she saw Mr. Peltier kill the agents. In April, a three-judge appeals panel granted a motion for a new hearing that would be limited to information Mr. Peltier's attorneys have obtained from the FBI under the Freedom of Information Act. They contend that a bureau teletype indicates that an AR-15 rifle linked to Mr. Peltier was not the weapon that killed the agents.

The hearing has been scheduled for Oct. 1 in Bismarck, South Dakota.

Many people have complained of irregularities in Mr. Peltier's prosecution and conviction. In 1978, the 8th U.S. Circuit Court of Appeals said that there had been "a clear abuse of the investigative process by the FBI," but it nevertheless upheld the conviction.

Last year, 50 members of Congress urged the court to grant Mr. Peltier a new hearing. Mr. Peltier, 39, is confined at the Medical Center for Federal Prisoners in Springfield.

In an interview, he appeared to be in good health. He is lean, but not emaciated. He spoke softly, but in a strong voice.

The fast technically ended May 25, but Mr. Peltier said he now eats just enough food to prevent prison officials from force-feeding him.

Paul Taylor, the executive assistant to the warden, said, "If he were only eating a few bites of food, he wouldn't be looking as fit as he does."

The Indian leader is isolated from other prisoners, held in what he calls "the hole." Mr. Taylor, who prefers the term "administrative detention," said Mr. Peltier was a security risk and might be a detrimental influence on other inmates at the medical center.

Mr. Peltier began the fast April 10 with two other inmates at the Federal Penitentiary in Marion, Illinois. The three men said they were protesting their lack of religious freedom because the maximum security prison restricted inmates' privileges after the murder of two guards in October.

After the crackdown, many inmates, including Mr. Peltier, complained of beatings. Mr. Peltier said he was prevented from having religious objects in his cell, including sacred eagle feathers, a pipe and incense. Nor was he allowed, he said, to meet with a medicine man, or spiritual adviser.

The other men, another American Indian and a Mexican Sephardic Jew, made similar charges. After they were transferred to the medical center in May, they began taking food.

A month later, Soviet press reports depicted Mr. Peltier as "a typical example of politically motivated persecutions of Americans who are fighting for human rights; against tyranny and lawlessness, against the predatory practices of the government and the monopolies."

Four Soviet scientists wrote to President Ronald Reagan, saying, "Please stop the violation of human rights in

your own country, in the state of Missouri, where your compatriot Leonard Peltier is dying."

Mr. Peltier said he agreed with the Soviet assessment of his case.

Mr. Peltier, whose mother is Sioux and father is Chippewa and French, grew up on the Turtle Mountain Chippewa Reservation in North Dakota, where poverty was widespread.

At the time of the shootings at Pine Ridge in 1975, violence was rampant on the reservation as various factions fought each other. Mr. Peltier and members of the American Indian Movement were living in a spiritual camp near a compound owned by the Jumping Bull family and working with the traditionalist faction.

Most people on the reservation were armed, he said, "to protect themselves, you know, in case there was an attack."

He said that when the shooting began on the morning of June 26, 1975, he was a quarter mile from the camp. As he ran back, however, he joined in the shooting.

"I admit I shot back at them," he said. "We were running up the hill. This was quite a ways from the Jumping Bulls' compound. I was with a group of 17 people. I was leading them out of there. We were running up this hill and there was bullets flying by my head awful close. I heard them. I hit the ground. I had no other choice but to turn around and start firing back."

The government gives a different version of what took place and says that after the agents chased a pickup truck onto the reservation, the truck stopped at a fork in the road and that some men, including Mr. Peltier, jumped out and opened fire on the agents.

When the shooting ceased that night, the bodies of the two agents, Ronald A. Williams and Jack R. Coler, both 28, were recovered. They had been shot at close range.

AMERICAN TOPICS

TV Viewers Voted With Their Dials

The Republicans will have to look for victory somewhere other than in the television ratings. Although 19.1 million homes tuned in for the closing session, when President Ronald Reagan spoke to the party's national convention in Dallas, the audience averaged only 16.3 million homes each night.

In contrast, the average audience for July's Democratic convention was 17.2 million homes.

The Republicans got fewer viewers because their convention had less drama and suspense than that of the Democrats, according to network analysts.

Which show pulled the most viewers during convention week? ABC's always dramatic, always suspenseful "Loveboat."

"It's very maddening to travel more than 600 miles, finally reach my goal and have this happen," he said. Still, Mr. Tyrrell recognized the random assault for what it was: "The trip was really beautiful," he said, "and Washington has been great. It's just two individuals (who weren't), that's all."

Short Takes

The U.S. Customs Service has cautioned travelers about buying personal computers manufactured in Asia and Canada that claim to be compatible with Apple or IBM models. They may contain unauthorized copies of copyrighted or patented components, and if they do, Customs is required to seize them from returning travelers.

Traffic has been lighter than usual this summer along traditional vacation routes through the West. The number of people flocking to look up at the faces of four presidents carved into

Hispanic Candidates Fail in Los Angeles

Even though Los Angeles has more residents of Mexican ancestry than any city other than Mexico City, the city has not elected Hispanic officials.

Last week, an attempt to change that fell short.

In a special recall election, two Hispanic residents sought to remove Arthur K. Snyder, who for 17 years has represented a City Council district in which 75 percent of the residents are Hispanic.

Mr. Snyder has long been accused of conflicts of interest and has even been fined because of them. But he's popular all the same, and he easily defeated his Hispanic opponents.

Now, Mayor Tom Bradley says he would propose adding two seats to the 15-member council to give Hispanic competition more of a chance. Few City Hall watchers expect that idea to go anywhere.

Uncommon Assault, Uncommon Reaction

After walking for six weeks and more than 600 miles (about 975 kilometers) through five states, 35-year-old Thomas Tyrrell, a Detroit psychotherapist who suffers from multiple sclerosis, finally reached Washington and was drawn to the gleaming, floodlit dome of the U.S. Capitol.

There, only a few yards from where he planned to lobby Congress on behalf of research into the incurable neurological disease that afflicts him, he was attacked by two men, kicked in the stomach and groin and robbed of \$55. They also broke the crutch that had carried him there.



Mount Rushmore sculpture during a face-lift.

the side of Mount Rushmore in South Dakota is down 8 percent this year, and at Yellowstone National Park, in the corner of Wyoming, Montana and Idaho, tourism has dropped 4.4 percent. Apparently, the Summer Olympics in Los Angeles, the World's Fair in New Orleans and the strength of the dollar abroad are the reasons.

The growing surplus of doctors means they will have to take steps to expand business, a panel of experts studying future medical care has projected. What kind of steps? House calls, for instance.

McDonald's is going after the trucker trade. Construction of McStop, a complex including a small shopping center and motel as well as gas station and restaurant, starts this fall in Lakeville, Minnesota.

House Panel Shields Paper

By Cass Peterson

WASHINGTON — A House of Representatives subcommittee has accused the White House of shielding documents that could link presidential aides to last year's controversy over management of a fund for hazardous waste cleanup.

It said Thursday that the White House had attempted to thwart a congressional investigation by withholding information on "misconduct and political manipulation."

"A volume of documents remain at the [Justice] Department which represent White House staff involvement with the EPA," says a report issued by the House Energy and Commerce oversight subcommittee. "Nevertheless, the department, at White House direction, has declined to make this final set of papers available."

Among the documents the panel has requested are the written recollections of the cabinet secretary, Craig L. Fuller, the White House deputy chief of staff, Michael K. Deaver, and a White House policy aide, Martin Smith.

The investigation into the fund had evolved into a confrontation between Congress and the executive branch when President Ronald Reagan claimed executive privilege over thousands of documents on the Superfund and ordered Mrs. Burford not to release them.

Those documents eventually were turned over to House investigators under an agreement reached March 9, 1983, the day Mrs. Burford resigned.

At the time, Mr. Reagan prom-

ised congressional investigators almost free access to the documents they demanded. The president, while strongly asserting his right to claim executive privilege, said he would turn over the papers to dispel the growing suspicion that the White House was trying to cover up wrongdoing. Only those documents that might compromise active investigations would be withheld, he said.

However, the subcommittee, headed by Representative John D. Dingell, a Michigan Democrat, said it needs additional material to fully investigate "evidence of substantial contacts" between White House and EPA officials.

Miss Lavelle was dismissed by Mr. Reagan on Feb. 7, 1983. She was later convicted in U.S. District Court on four counts of perjury and other charges related to her dealings with a former employer while at the environmental agency. Her six-month prison sentence has been stayed pending appeals.

The report quotes testimony from Miss Lavelle's staff, much of it received in closed sessions, which suggests that contacts between Miss Lavelle and White House officials "were far more extensive than either she or Ms. Lavelle have acknowledged to date."

The report quotes two Lavelle aides as saying they placed 25 calls from her to Mr. Fuller, the cabinet secretary, and 30 to Mr. Smith of the policy development office. Miss Lavelle received about the same

House Inquiry

By Philip Shabecoff

New York Times Service

WASHINGTON — Calling contamination of U.S. underground water by man-made toxic substances a potentially grave threat, the Environmental Protection Agency has announced its plans to protect these water supplies.

Several environmental groups and other critics immediately assailed the agency's plan as doing too little, too late.

The long-deferred national strategy would keep primary responsibility for safeguarding underground water at state level but would introduce a variety of federal initiatives, including a program to control leakage from underground storage tanks containing petroleum and other hazardous materials.

The strategy establishes three categories of underground water systems to be accorded varying levels of protection.

One, "special" ground water that is highly vulnerable to contamination and on which large numbers of people depend for drinking and other uses, would be afforded stringent protection.

Under the second, most of the ground water currently in use would continue to receive the protection afforded under existing regulations.

The third category, water now highly saline or contaminated and not likely to be used by public water systems, would not be subject to strict protection or cleanup requirements.

While the strategy sets national guidelines for protecting water, Alvin L. Alm, the agency's deputy administrator, said that no new mandatory requirements were to be imposed on the states.

At a press conference that accompanied the release of the plan Thursday, he emphasized that state control of ground water was "a tradition deeply ingrained in our legal and institutional history."

However, Representative James J. Florio, a New Jersey Democrat who has been one of the most active legislators on toxic contamination issues, assailed the EPA plan for failing to impose mandatory standards on the states for protecting ground water.

"That is what the problem is all about," Mr. Florio said. "This is just another example of the administration giving the impression of activity on an environmental problem when it is not really doing anything."

The Clean Water Action Project, an environmental organization, said that the EPA strategy would provide little protection of water supplies from toxic contamination. The group complained that the plan "does not require the states or federal government to do anything to protect ground water," adding, "The strategy is merely guidance."

Nearly half the U.S. public depends on water from underground



Rita M. Lavelle

number of calls from the two officials and less frequent calls from Mr. Deaver, the aides testified.

"The frequency and timing of those communications raise serious questions about the extent to which the White House became involved with the Superfund program," the report states.

According to subcommittee aides, the documents now being sought stem from an internal White House investigation last year.

Fred F. Fielding, the White House counsel, launched the inquiry into contacts between White House aides and EPA officials.

The results of Mr. Fielding's investigation have never been made public, but the responses from White House aides were forwarded to the Justice Department, which was asked to treat them as "White House documents."

Mondale Would Set Up Tax Fund to Cut Deficit

By Milton Coleman

Washington Post Service

ST. PAUL, Minnesota — Walter F. Mondale, hinting at the contents of his plan to reduce the federal budget deficit, has told Democratic business leaders that revenues from his proposed tax increases would be set aside for the purpose of lowering the deficit, not for higher spending on social programs.

Mr. Mondale's disclosure came during a meeting Thursday morning with members of the Business Council of the American National Committee, The Democratic national chairman, Charles T. Mann, said Mr. Mondale had assured the businessmen that revenues from tax increases would be "sequestered for reduction of the deficit."

That reportedly drew applause from many of the business leaders.

For more than a month, Mr. Mondale and top aides have been trying to put together a deficit-reduction package. Mr. Foley said Thursday that it would be unveiled in the next several weeks.

Mr. Mondale has yet to specify how he would meet his pledge to

programs, according to Walter W. Heller, former chairman of the Council of Economic Advisers and an adviser to the Mondale campaign.

Mr. Heller said that earmarking funds is "very tough" and often the money could only be approximately.

"Still," he said, "the spirit of it is perfectly clear."

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Walter F. Mondale

cut the deficit by two-thirds. He proposed in January to impose \$60 billion in new taxes and cut spending by \$70 billion, much of it in defense. But he also said he would spend \$30 billion more on social programs and efforts to make the United States more competitive in international commerce, retrain workers and improve education.

The plan called for collecting \$30 billion in additional taxes through a four-year deferral of tax indexing to the cost of living, and \$6 billion annually by canceling a proposed tax cut for those earning \$60,000 a year or more.

Teachers Endorse Mondale

The 1.7-million-member National Education Association endorsed Mr. Mondale for the presidency Friday, claiming that Mr. Reagan, if re-elected, would "undermine the public schools."

The teachers' union said the endorsement meant that "thousands of teachers will be mobilized to get behind the Mondale candidacy."

U.S. Poll Shows Mixed Effect of Jackson Backing

WASHINGTON — A majority of black voters say that the Reverend Jesse L. Jackson's endorsement of Walter F. Mondale makes them more likely to vote for the Democratic ticket, but the endorsement has generated a white backlash that could hurt Mr. Mondale, according to a poll taken for the Joint Center for Political Studies.

In the survey, done in late July and early August by the Gallup organization, 65 percent of black respondents said Mr. Jackson's campaign and activities made them more likely to vote for Mr. Mondale because of Mr. Jackson's endorsement, 17 percent said they were less likely to do so for the same reason. In the South, 19 percent of the whites said they were less likely to vote for Mr. Mondale because of Mr. Jackson's endorsement.

However, though 10 percent of white respondents nationwide said they were more likely to vote for Mr. Mondale because of Mr. Jackson's endorsement, 17 percent said they were less likely to do so for the same reason. In the South, 19 percent of the whites said they were less likely to vote for Mr. Mondale because of Mr. Jackson's endorsement.

An overwhelming majority of blacks, 88 percent, said they intended to vote for Mr. Mondale. Only 5 percent favored President Ronald Reagan. A majority of white respondents were for Mr. Reagan, by 57 percent to 37 percent.

The poll of 1,365 whites and 902 blacks showed blacks and whites had radically different views on most questions. When asked about their finances now compared with four years ago, 46 percent of whites said they were better off, 25 percent were worse off and 27 percent reported no change. Only 30 percent of the black respondents said they were better off, with 43 percent describing themselves as worse off and 24 percent about the same.

Paul Zweig, Poet, Critic, Is Dead at 49

New York Times Service

PARIS — Paul Zweig, 49, a poet and critic whose recent study of Walt Whitman was highly acclaimed, died Wednesday in the American Hospital of Paris. He had suffered from lymphatic cancer for six years.

Mr. Zweig was working on a book on cave paintings in France, "The Quest for the Beginning." A native of New York, he was the chairman of the department of comparative literature at Queens College in alternating years and was scheduled to head the department this fall.

Mr. Zweig's "Walt Whitman: The Making of a Poet," was published this spring. His books of poetry and criticism included "The Adventurer," "Against Emptiness," "The Heresy of Self-Love," "The Dark Side of Earth," and an autobiographical work, "Three Journeys: An Autobiography."

Other deaths: Gerald P. Zornow, 68, a retired president and chairman of Eastman Kodak Co., Wednesday at his suburban home near Rochester, New York, after a long illness.

Stanley Sterling Survey, 73, a key adviser on tax policy in the Johnson and Kennedy administrations, of heart failure in Boston. He was a professor at Harvard Law School from 1950 until 1982.

Emmanuel T. Ward, 87, a carver and painter who helped turn the production of waterfowl decoys into an art form, Tuesday of congestive heart failure in Crisfield, Maryland.

Cyrl Boula, 82, a Czechoslovak artist, Wednesday in Prague, the Czechoslovak press agency reported.

Sawako Ariyoshi, 53, a Japanese novelist, Thursday at her home in Tokyo.

Economist Sees Flaw in Reagan Welfare Policy

WASHINGTON — Arthur B. Laffer, a proponent of the theory of supply-side economics on which President Ronald Reagan has built his budget policies, says one of the president's programs is flawed.

In a study released Thursday, Mr. Laffer said that economic incentives for welfare clients to start working are extremely small. He said that situation existed, at least in part, because of changes that Mr. Reagan pushed through Congress in 1981 that cut benefits for the working poor.

Mr. Laffer, citing statistics he compiled in Los Angeles County, said that welfare clients who go to work or increase their existing hours of work sometimes lose so much in benefits for each dollar earned that they end up with less spendable income.

For example, in the most extreme case in Mr. Laffer's study, a family of four with no jobs could have as much as \$1,261 a month in net spendable income from Aid to Families with Dependent Children, medical assistance, food stamps, housing subsidies and the like.

But if the head of the family went to work and was paid \$1,200 a month, the various welfare benefits would be cut so much that the family's after-tax income from all sources would be \$1,215 a month, \$46 less than if the head of the family stayed on welfare.

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Herald Tribune

Published With The New York Times and The Washington Post

A Whopping Trade Deficit

The meaning of the \$14.1-billion U.S. trade deficit in July, announced on Wednesday, is that the American economy is becoming more unstable. The pattern is a slow rise in U.S. exports and a very fast rise in imports. The July deficit is a truly awesome number.

The trade deficit is rising at a rate of acceleration that is not likely to be sustained a great deal longer. The trade deficit was large in 1982. It was twice as large in 1983. In the first seven months of this year it is already larger than it was in all 12 months of last year. The total for 1984 will certainly be more than \$120 billion, and possibly by a wide margin.

The explanation, the Reagan administration correctly says, is that the international value of the dollar has risen very high against other countries' currencies. In terms of the things that it can buy, the dollar is currently overvalued by at least 20 percent. That keeps imports very inexpensive for Americans.

How, you might ask, is America paying for this flood of imports? The answer is that America is not paying for them. The bills are being paid, mostly in the form of dollar deposits in banks in America and abroad and in other short-term dollar investments. At some point—no one knows when—traders and investors abroad will decide that they are holding enough dollars, and they will start to convert some of their holdings into other currencies. You will know when that happens. The first signal will be a fall in the dollar's exchange rate.

The second will be a rise in the interest rates. The third will be a rise in the U.S. inflation rate, as imports begin to cost more.

The White House greeted this latest trade figure as further proof that the economy is expanding rapidly. That is not quite right. It is proof that demand and consumption are expanding rapidly—but they are increasingly being met by producers in other countries.

Meanwhile, the standard of living is rising merrily—if temporarily—on that tide of imports. Well, perhaps not so merrily for everyone. People whose jobs and businesses are threatened by the imports will lobby harder than ever for protection against them.

These latest figures show that nearly a third of all the steel being used in the United States is imported. Even before that number appeared, it was highly probable that the White House would act before the election to cut down steel imports. Now it is all but certain.

This will bring the president some applause from the steel towns, but it will do widespread damage to the economy—beginning with the American industries that buy steel to manufacture their own products.

But, the administration will ask, what else could the president do? There is an answer. Imports are high because the dollar is high, because American interest rates are high, because the Reagan administration is running a very large budget deficit.

—THE WASHINGTON POST.

Colombia Sets an Example

The president of Colombia, former journalist Belisario Betancur, after a prodigious personal effort recalling Jimmy Carter's approach to Camp David, has reached cease-fire agreements with the principal guerrilla groups active in the country for more than 20 years. Whether the cease-fires lead on in the months and years ahead to "national dialogue" and an extended political process is a matter of much tense speculation. Meanwhile, Colombians are doing an extraordinary thing.

Mr. Betancur was elected in 1982 promising to work for peace in Colombia and in neighboring Central America. While the Contadora regional peace effort of which he is a part grinds on unproductively, his domestic initiative, working against pervasive local pessimism, has moved ahead. An early individual amnesty attracted 2,000 guerrillas. By bringing a wary military under tighter control, President Betancur has been able to reduce official repression, take on right-wing vigilantes and weather the political storm created by his secret meeting in Spain with guerrilla chiefs last year. The growth of a huge and frightening

cocaine empire within Colombia has added to the national urgency of his task.

To skeptics among the guerrillas, who have not, after all, been defeated in the field, Mr. Betancur must demonstrate that the political way offers reasonable gains. To skeptics in the military and civilian establishment, he must show that the political way does not grant the guerrillas illicit gains. He has two years left of his term to balance an equation that has elsewhere stoutly resisted balance. He deserves all the political and moral support his democratic friends in the hemisphere can muster.

His progress raises the question of whether a political solution is possible in the civil wars in El Salvador, Nicaragua and Guatemala. Despite sporadic Cuban involvement, armed resistance in Colombia is much more local than in Central America; the level of fighting has been lower; it took Colombian guerrillas more than a generation to be drawn in; Mr. Betancur is a very special man. Still, the Colombian example may yet be contagious. It can only help to have a model of successful negotiation.

—THE WASHINGTON POST.

Other Opinion

The KAL Riddle a Year Later

This Saturday, Sept. 1, marks the first anniversary of the shooting down of a Korean Air Lines plane by Soviet fighters off Sakhalin—a mysterious incident in which all of the 269 persons aboard were killed. Memories of the tragedy are coming back as Soviet media review Moscow's claim that the Korean jetliner was on a spy mission, and Western media carry disturbing accounts of the possible U.S. role in the catastrophe. The central question—why the flight strayed into Soviet airspace more than 100 miles (160 km) off course—has not been fully answered. The plane's black box, which would tell exactly what happened before it was shot down, has not been found despite an extensive search. The incident remains a riddle that may never be explained.

In retrospect, the KAL affair has badly tarnished the international image of the Soviet Union. The current Soviet media campaign linking the incident to foreign spying may be part of an effort to alter the Western perception of a cold-blooded superpower that would do anything to protect its airspace.

It would not be easy to change that image, given the deep scar which the tragedy has left in the Western consciousness. Yet time has its healing effect. A year afterward there is no exchange of angry words. Instead there are restrained moves to mend East-West relations.

—The Japan Times (Tokyo).

The Soviet Union has never admitted its responsibility for the death of 269 innocent people. From the first days after the downing, the Russians' propaganda and disinformation machine has been in high gear, attempting to place the blame on anyone but themselves. For the past year the machine has continued to churn out baloney, hoping to persuade conspiracy buffs in the United States and abroad that the airliner was in fact some sort of spy plane. Some of the propaganda has been picked up and relayed by others, who are busy taking advantage of unbridgeable gaps in our knowledge of what happened. This has produced a genre of spy-plane theories.

I have often advanced the theory that the reason why successive U.S. presidential candidates diminish in stature and quality with every four-year election—and take a look at every one since Roosevelt—is that any American of intellect and value is scared to stand in case he should get in, and thus join the catalog of no-goods or nonentities who have inhabited the White House in our time. The late Adlai Stevenson, last of the political intellects, once told me: "I am standing for election knowing that it may be the last independent decision I ever make, and not a very smart one at that."

—James Cameron, *The Guardian* (London).

FROM OUR SEPT. 1 PAGES, 75 AND 50 YEARS AGO

1909: An Earthquake Shocks Rome
ROME — An earthquake this afternoon [Aug. 31] rocked houses in Rome, but without causing great damage. It, however, caused considerable excitement. It was asserted that there was a shock at eleven this morning, but the apparatus at the seismological observatory recorded only the afternoon shock, which affected the entire city, at ten minutes past two. The movement was undulatory and its direction north-westerly. A few chimneys and pots of flowers fell. People ran to see the facade of the church of Santa Caterina, in the Piazza Ricci, which appeared to be cracked. The prisoners in Regina Caeli shrieked like madmen, beating on the doors of their cells. It was necessary to send soldiers to establish order in the prison.

1934: Traveler Wore Hope Diamond
NEW YORK — For the first time since Catherine of Russia more than 100 years ago wore the famous Hope diamond, valued at more than \$1,000,000, the famous jewel was worn in Russia recently, it was disclosed here [on Aug. 31] by Mrs. Edward B. McLean, of Washington, D.C., owner of the gem, who announced on her arrival here aboard the Berengaria that she had worn it in defiance of Soviet officials at a Moscow night-club. She admitted that the Russians were naturally irritated at the display of the ill-fated jewel that was once the prized possession of their Empress, and she boasted that she had set a precedent which would give American women the right to wear their jewelry in Russia if they so desired.

At Least This Time the Warning Signals Are Noticed

By Flora Lewis

ASPEN, Colorado—An international group of finance and business experts has been mulling over the U.S. and world economy here where the air is pure and thin, far from the dense smog of politics in the lowlands.

As usual, no one wanted to be quoted with bad news. The word is "glum," unless . . .

It is the "unless" that is striking, the big difference between the current effort to restore steady economic growth and the heat that filled ballooning hopes to the bursting point in past crises. That means there is warning, a remarkable consensus that the current American boom cannot be sustained, and even considerable agreement on how to improve the outlook. If it means that euphoric dreams of soaring ever upward are doomed, it also means that a crash is not inevitable if authorities wake up in time.

There is an assortment of ideas on what to do, but they go in the same general direction, requiring changes in U.S. policy and more international cooperation. The most depressing side of the analysis is the fear that governments will not do what is needed until they have to, that is, until it is too late to ease the pain.

The fear is based on evidence that the last thing governments want to be quoted on is bad

news. Therefore it is "politically impossible"—the phrase keeps recurring—to get public support for preventive measures, since the need for them isn't explained. Catch-22.

Nonetheless, groups like the one here are trying to develop proposals for the day when something can be done. There is no ideological conflict. The questions are practical ways to make the capitalist system work smoothly, with less risk of disaster, and the conviction is that the free market will not and cannot do it alone.

Point number one is the U.S. budget deficit. The dollar's supremacy in the world obscures the fact that it is part of the colossal world debt, financed now by a flow of capital from poorer foreign lands. Thus is America joining the ranks of net debtor countries, and running up interest obligations. The question put was how long America can keep living on "borrowed money and borrowed time." Obviously, only as long as others are willing to pay.

The theoretical Keynesian issue of whether deficits can be good for you has been passed by. Now it is when Britain's Denis Healey calls the "sado-monetarists" who reverse themselves to

say that the debt can't hurt, and the Keynesians who say that it must be reduced, or else. In fact, the most urgent argument for bringing the deficit down now is to be able to refloat later when the boom threatens to bust.

The people most closely involved, if not most Americans, are keenly aware of how intimately the United States is entwined in the world economy, and how forlorn is the idea that the United States can sustain its prosperity all alone. The international financial system is threatened by a debt crisis that can only be surmounted with general long-term growth.

America cannot be insulated, nor can it go on indefinitely keeping others afloat by importing their goods instead of selling its own. The critical word is "adjustment," which means different things in different countries but, in all cases, official steps, unpopular in the short term, aimed at recovering longer-term balance.

With hindsight, current problems were no more unavoidable than is worse trouble ahead, unless . . . there is also broad consensus on lessons to be drawn. They are not vastly different from the lessons that led to the Federal

Reserve system and new banking laws in the United States after repeated crises three generations ago. The lessons now are basically that there is a common international interest, as there was then a national interest, which will be injured if nothing is done to draw narrow interests into a common effort.

It comes to a belief that some kind of government accord is needed to perform functions of a world central bank, even though there is not going to be any world federation to organize it.

The details are intricate, but they are not beyond reach. They have to do with officially monitoring international debts; enlarging the coordinated authority of international institutions such as the World Bank, and providing money funds; creating incentives for national prudence. No modern country is without banking and finance laws, but nothing exists to supervise the huge new credits and debts that roll around loose among nations.

This time, unlike 1929, the signals are noticed. Precautions are known. If they are not taken, for stubborn political and shortsighted nationalist reasons, everybody will pay again, whether they knew or just whistled hope.

The New York Times.

A Salute to Candidates Hard Done By

By David S. Broder

WASHINGTON—Democracy is a most peculiar form of government. It depends for its vitality on an election process in which exceptional people voluntarily subject themselves, their careers and their reputations to the whim of the voters, most of whom are their inferiors in knowledge, energy, ambition and eloquence. So it is this year.

Ronald Reagan, George Bush, Walter Mondale and Geraldine Ferraro are, by any reasonable reckoning, four of the most successful people in America. In every case it is success earned by dedication, drive and ability. In two months' time, after being subjected to competitive pressures and public and press scrutiny that most of us will never experience and cannot really imagine, two of these four talented and successful people will be sent into retirement with the label of losers.

The system of democracy demands that sort of ritual sacrifice. As voters, Americans have come to accept the competition of the talented as an entitlement. Only when an occasional contestant says, as Ms. Ferraro did the other day, that she or he is having second thoughts about being served up as the curate at this dinner of democracy, do we take another look at the process.

Before we all get caught up in the finger-pointing and judgment-passing that constitute a campaign, we might pause to note what extraordinary people these are.

Ronald Reagan was 53 and financially secure enough to retire from a successful 30-year career in broadcasting, movies and television when he made the speech for Barry Goldwater that launched him on his second profession, politics. Since then he has run successfully in three major elections and served for eight years as governor of California and now for almost four years as president of the United States.

In both Sacramento and Washington Mr. Reagan brought about basic changes of policy direction that altered the lives of millions. He has survived a host of political challenges and one assassination attempt. At 73, he is putting it all on the line in a bid for re-election that he could have sidestepped.

George Bush was born to wealth and family position, an American aristocrat. He could have followed the path from Yale to Wall Street, with a guarantee of success. Instead he went from navy aviator to oil wildcat to politician. By taking that route he invited and experienced defeat, first in a Senate race and then in the quest for the presidential nomination. But he has also shown that he is a man of courage and conviction in a broad and challenging variety of positions.

Walter Mondale has the reputation of being a cautious, almost colorless politician—a pale shadow of his mentor, the late Hubert Hum-

phrey. That image is contradicted by a career in which he has constantly chosen to test himself in ever-tougher competition and for higher stakes. The law student became a party organizer. The young attorney vied with others for appointment as state attorney general. The attorney general set his sights on a U.S. Senate seat and won it by appointment. Re-elected to the Senate, he went after the vice presidential nomination that older and more experienced colleagues coveted.

This year the defeated former vice president tackled seven rivals for the presidential nomination. He is challenging a popular and telegraphic general set of his rights by a series of television debates. All of these challenges in the Mondale biography speak of talent



That Speech Writer Should Have Been Fired

By Jack Warner Jr.

LOS ANGELES—"I do appreciate your giving me a few minutes, Mr. President. This shouldn't take long. A speech for a cemetery dedication isn't quite the same as an emancipation proclamation. Still, your secretary of war did think I should have a look at it, in view of the rough election year ahead of us."

The short man with the pink face and flowered tie pulled his chair close to the president's desk.

"With all due respect, sir, you start out all wrong. How many people will know that 'four score and seven years' is 87? The time they figure it out, you'll have lost them."

The little man shifted some papers from one hand to the other.

"Conceived in liberty . . . Oh dear, Mr. President, this business about conception is much too controversial and upsetting to a great many people and must be dropped. A few words here about America being born free should be enough."

"Ah, here is something else that

disturbs me. Many good people are very concerned about this 'created equal' business, though they might never admit it in public. If everybody really was created equal—and I won't say they're not—it could raise utter havoc with the party and cost us votes and money."

There was a moment of silence as the aide pulled at his vest, then moved closer to the oil lamp on the wide desk. Presently a cloud of anguish crossed his face.

"Oh, dear. In this next part you seem to be underestimating your audience terribly. Everybody knows that we're engaged in a great civil war," especially people who go to cemetery dedications, so why remind them of it? Simply say how pleased you are to have been invited here to make this gift to the people from their government. You might want to thank the corporations that

provided the matching funds to limit public expense. That sort of thing goes very well now, with taxes and the budget being what they are. I know you inherited most of that from the previous administration, but we don't want to get too political on this occasion."

The tall figure behind the desk shifted in his seat and there was a sharp cracking noise, as if a pen had been snapped in half.

"In good conscience, sir, I'm troubled by this bit about our not being able to dedicate, consecrate or hallow this ground. Isn't that precisely the reason for your being in Gettysburg? How can President Lincoln say that he is not doing something that everybody can clearly see he is doing? The greatest mistake any public figure can make is to contradict himself in public . . ."

The writer, a film producer and novelist, contributed this fantasy to the Los Angeles Times.

Washington Would Have To Update His Dentures

By Robert Bendiner

NEW YORK—It might help tepid Mondale supporters out of the doldrums to consider how earlier candidates would have fared if there had been television to divert the voter's mind from a man's position on, say, war and peace, to his looks and personality, if any.

It is entirely possible that if George Washington had to perform on the tube, voters would be put off by the severity of a face rarely lit by a smile. No orator, he was reserved in public and, to be fair to him, could smile only to a limited degree for fear of losing his primitive dentures. A remote, statuesque dignity served his purpose well, but it would win low Nielsen ratings.

Altogether, presidents of an earlier day, including some of the best, were not all that winning in speech or appearance. John Adams, sometimes tagged as "His Rotundity," was pompous in manner, pudgy in form and always self-righteous. Thomas Jefferson, although a brilliant writer and charming in small groups, was a poor speaker and shunned confrontation to the point that he left it to Adams to defend his Declaration of Independence before the Continental Congress.

James Madison would have won from television viewers no better than an indulgent smile as he stretched to his full 5 feet 2 inches (1m58)—even if he didn't wear clothes that were out of date and have a face that prompted Washington Irving to describe him as "a withered little Apple-John."

John Quincy Adams, short, bald and with a mouth fixed in disapproval, was candid about his want of charm: "I am a man of reserved, cold, austere and forbidding manners." In today's media he would have stood no chance.

Abraham Lincoln would hardly be telegraphic. It is possible that his sad, deep-set eyes would impress some with his profound humanity, but the awkward body, the ill-fitting clothes, the long dangling arms would encourage the casual viewer to accept the conclusion of one of his countless detractors that "Bar-num should buy and exhibit him as a zoological curiosity."

As the country aged, the media brought its public figures closer and closer to the voters—through the proliferation of newspapers and magazines, aided by artists, caricaturists and photographers. Then came radio and, newest of all, television. A man could have wars and still be judged on other grounds. Image was not yet the be-all and end-all.

Otherwise Grover Cleveland, dour and dumpy, would not have won the popular vote three consecutive times. Even a ham like Theodore Roosevelt perhaps came across better in print—his political prose was splendid and his expressions memorable—than he might have on a medium that would have accentuated his squeaky voice.

A few early presidents would have done well on television. If these few handsome men could have entered America's living rooms, they would immediately have been deemed to have the "presidential look." I refer to that trio of political giants: Franklin Pierce, Chester A. Arthur and Warren G. Harding.

The writer is a former member of the editorial board of *The New York Times*, in which this appeared.

Many Moslems Like Ayatollah Khomeini's Causes

By Haroon Siddiqui

TORONTO—Many Moslems like much of what Ayatollah Khomeini stands for. The causes he espouses read like a checklist of Moslem grievances, starting with procuring a homeland for Palestinians.

If you want to blunt Khomeini's appeal, all you have to do is solve the Palestinian problem, says Ayver Moazzam, an Islamic academic from India and author of two recent books on Islamic issues.

Ayatollah Khomeini is a radical priest who identifies with the proletariat against the bourgeoisie. His regime has allocated millions of dollars to many foundations serving as "a refuge of the dispossessed." The Koran urges Moslems to make the mosque the center of their lives, so Ayatollah Khomeini has taken most municipal functions out of bureaucratic hands and given them to the mullah, the local clergyman.

The regime has created hundreds of thousands of jobs. People who never before received a penny from the state form the backbone of the ayatollah's support. They will fight for the regime if it is threatened.

By cutting political, military, economic and cultural links with America, the ayatollah has attacked an inferno complex vis-à-vis the West. He has given Iranians confidence in themselves and pride in Islam and their history. He has taken his people out of the Western orbit—the first Moslem leader to do so.

Ayatollah Khomeini also has made the unsophisticated echoes of ordinary Moslems—faith in Islam, racism in Israel, raw anti-Western and anti-Soviet sentiments—the dominant theme of the Moslem world. This has created problems for Westerners as well as leftist and pro-Soviet Moslems in Iran and elsewhere.

Westerners, and journalists in particular, talk to. But upper-crust Iranians, and those in Western exile, provide a skewed vision. They do not represent the majority—the masses who provide the foot soldiers of revived Islam and its revolutions.

Ayatollah Khomeini has raised the religious political consciousness of most Iranians to a level other leaders can only dream of. "The United States and the Soviet Union can invade us and militarily take over Iran," he has said, "but cannot rule over millions of unwilling Moslems."

"The historic, religious and psychological bearing of Iranians leaves hardly any need for liberal democratic institutions," says a Moslem ambassador. "There is no room for a board of directors. There is a great tradition of a cult of indispensability around the head of the family, the religious hierarchy and the head of the state. Khomeini is the first man to

find himself in the dual role of head of the clergy and head of state."

Ayatollah Khomeini's absolutism fits in with the Sunni concept of a leader. Moslem thinkers' prototypes of a modern Islamic state all envisaged a caliph-like figure, a pious jurist with enormous powers. To many Moslems, Sunnis included, Ayatollah Khomeini represents this ideal, even

Iran's neighbors plan a military alliance along the lines of NATO. They are also spending huge amounts on religious works to help wean Moslems away from Ayatollah Khomeini's influence.

also spending huge amounts on religious and charitable works to help wean Moslems away from Ayatollah Khomeini's influence.

Saudi Arabia has been providing funds for new mosques, for which it also offers an imam, or prayer leader, on a Saudi payroll. Such mosques boycott Ayatollah Khomeini and his revolution and toe the Saudi line on most religious issues.

Most mosques in Canada, the United States and Britain are out of bounds for Khomeini activists. These activists have been disbanded, for example, from the mosque in Washington, where they now pray on the sidewalk. Some of the opposition is based on the belief that politics should be kept out of prayer halls. Ayatollah Khomeini and his supporters believe the mosque should be a center for Moslem religious, social and political activities. Most leading Canadian, U.S., British and other Moslem organizations—beneficiaries of Saudi grants—try to keep Iran and Ayatollah Khomeini off the agenda at their seminars.

But all these attempts to undermine the Khomeini regime have not had much impact on its hard-core followers, inside Iran and elsewhere.

The writer is on the staff of the *Toronto Star*. This is the second of two articles from World Press Review.

Letters intended for publication should be addressed "Letters to the Editor" and must contain the writer's signature, name and full address. Letters should be brief and are subject to editing. We cannot be responsible for the return of unsolicited manuscripts.

LETTERS

A Pakistani Denial

Ever since the Sikh unrest began in the Punjab, Indian propagandists have been falsely blaming Pakistan for what was purely an indigenous domestic crisis in India. Pakistan strictly adheres to a policy of non-interference in the internal affairs of other countries, including India. I can authoritatively say that Pakistan is not trained, nor armed, nor financed any Sikh guerrillas. The allegation that there are Sikh guerrilla training camps in the Pakistan-controlled part of Jammu and Kashmir is also totally false.

KHWAJA IJAZ SARWAR,
Press Counsellor,
Embassy of Pakistan, Paris.

Provinces of Catalonia

Richard Eder's review of "Tinent Lo Blau" (July 27) gets the geography wrong. Catalonia starts at the French border with the province of Gerona and includes the provinces of Barcelona, Tarragona and Lerida. It does not include Valencia, and the strict order if going down the coast is Barcelona, Tarragona, Valencia, and not Tarragona, Barcelona, Valencia.

IAN RAVEN,
Saint Julia, Andorra.

Simple Commandments

William Safire's self-assurance in "How Israel Can Whip the Enemy" (Aug. 10) is enviable. There stands, with his feet firmly planted in mid-air, laying down the law on as complex a problem as the Israeli economy. He disarmingly calls his ideas simplistic, but in his vocabulary that seems to be a compliment. An interesting idea for his language column?

MEIR LEKER,
Paris.

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Director of the publication: Walter N. Thayer
410 Headquarters, 24-24 Hengstenberg Rd., Hong Kong. Tel. 2-85018 Telex 61170.
Munich: Dr. C. N. Böhm-Machikan, 61 Long Aene London W.C.2. Tel. 8-4802. Telex 263009.
S. 4. au capital de 1.200.000 F. RCS Nanterre B 73201170. Commission Paritaire No. 34321.
U.S. subscription: \$700 yearly. Second-class postage paid at Long Island City, N.Y. 11101.
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مكة المكرمة

Lots of Static at 2 U.S. Radios

Ban on Reporting Reagan Quip Upsets Munich Stations

By James M. Markham
New York Times Service

BONN — Never exactly a center of calm, Radio Liberty and Radio Free Europe in Munich are going through a new phase of unrest, agitation and dissent.

In the early 1970s, the two stations were shaken and demoralized by revelations that the U.S. Central Intelligence Agency had been financing their broadcasts to Eastern Europe and the Soviet Union. New statutes severed the ties to the CIA, putting the stations under the aegis of the semi-autonomous Board for International Broadcasting in Washington.

Infusions of cash and confidence from the Reagan administration lifted morale among many of the stations' 1,674 staff members — a lively and disputatious group of Poles, Ukrainians, Hungarians, Bulgarians and many others.

But lately a malaise has seized some veteran employees, who fear that an activist, vigorously anti-Communist management may be jeopardizing the stations' hard-won credibility in Eastern Europe and the Soviet Union.

Earlier this month George Bailey, a gregarious American linguist and former CIA officer who runs Radio Liberty, and George R. Urban, a dapper Briton of Hungarian extraction who heads Radio Free Europe, banned their news services from reporting President Ronald Reagan's quip about outlawing and bombing Russia.

In the United States, some news organizations hesitated before reporting the president's off-the-cuff remark, made Aug. 11 while Mr. Reagan was preparing for a radio address in California. But the Ba-

iley-Urban edict seemed to some staff members to reflect censorship, not news judgment, and it touched off protests.

On Aug. 15, James Edwards, a Briton who is news director, sent a sharp memorandum to Mr. Bailey and Mr. Urban. "Because you suppressed Wednesday's news story," said the memo, "our audiences heard it first from Moscow Pravda, Prague radio, Budapest television. Now that the Eastern media has attacked, you are allowing commentary, but as you have both confirmed Wednesday, you are still barring news treatment, more than 48 hours after the story was fully confirmed."

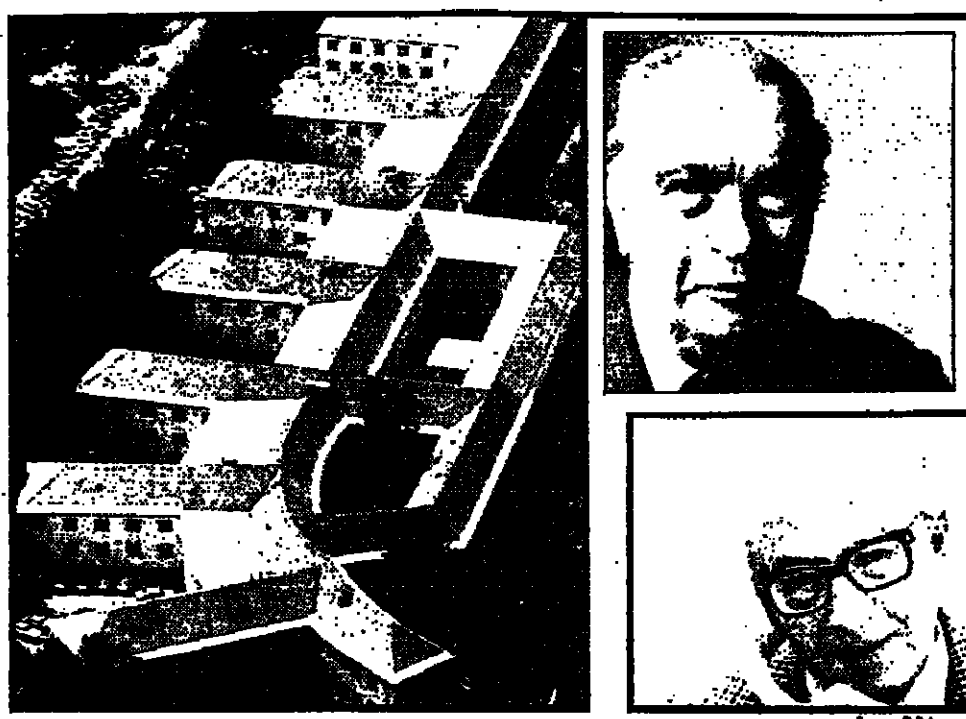
Mr. Urban, whose station's broadcasts are directed toward Eastern Europe said that commentaries broadcast about the Reagan quip showed there had been no censorship. "If you ask me," he said, "it was a nonstory at the time. But because it was blown up by the Russians, Bailey and I then thought we ought to give it treatment."

Similarly, Mr. Bailey, whose radio broadcasts to the Soviet Union, said that "the first day it seemed like a squiggle, inviting misinterpretation."

"When the Soviets began to scream bloody murder," he added, "of course we picked that up."

The president of the two stations, James L. Buckley, a former New York senator and former under secretary of state for security assistance in the Reagan administration, was not in Munich at the time. But he insists now that "there was no ducking of the issue" of Mr. Reagan's quip. "If the implication was, 'Let's kill it,' there was no such intention," he said.

Still the stations' local of the



The headquarters of Radio Free Europe and Radio Liberty in Munich. George Bailey, top, the head of Radio Liberty, and George R. Urban, the head of Radio Free Europe.

Newspaper Guild, the U.S. journalists' union, has protested over what one member called "our disquiet about the threat to the integrity of journalistic standards."

To some staff members the episode reflects the tougher anti-Communist and pro-administration line that they feel Mr. Bailey and Mr. Urban have brought to the stations in the last two years.

Some staff members say a preachy anti-Communist trend is particularly pronounced at Radio Liberty, where Mr. Bailey has given considerable editorial leeway to Soviet-born editors and opened the station to émigré organizations.

Mr. Bailey, 64, previously worked for the conservative Springer publishing company in West Germany.

Radio Liberty has long been a microcosm of the Soviet Union's own ethnic and linguistic tensions, and ferocious factional squabbles have pitted self-styled "Russian nationalists" against "pluralists" and "Zionists," many of the last category being Jewish émigrés. Law suits and protest memorandums, sometimes addressed to the president of the United States, have colored these quarrels.

"People are raised in the Soviet Union in an atmosphere of intolerance, which consists of a single truth," said Victor Fedoseev, who writes and broadcasts a program on human rights. "With Russians, if you have a political disagreement, you hate the guy for life. The problem is educating ourselves."

Speaking of the new mood at the stations, another journalist said: "What seems to be happening is that we are coming under pressure to toe the line." He noted that at the time of the mining of Nicaraguan harbors last spring, the stations avoided saying the mines had been laid by the CIA.

Mr. Buckley denied there had been any change in the ideological tone of the two stations and said he felt that in his two-year tenure "we are moving toward a better analytical product."

"Let's face it," he said, speaking of the international climate, "there is a certain chill that people have described over the years. I like to think we are a reasonably objective operation."

By expressing willingness to re-

U.S. Is Said to Consider Accepting Some Cubans

By Don Oberdorfer
Washington Post Service

WASHINGTON — The Reagan administration has expressed willingness to allow the entry of thousands of Cubans who want to come to the United States if Havana will take back about 2,700 undesirable refugees who arrived in 1980 by boat from the port of Mariel, administration sources said.

U.S. willingness to resume processing the immigration applications of Cubans, three and a half years after the normal legal immigration flow from Cuba was cut off by the administration, was conveyed to the Cuban government in two rounds of negotiations in New York in mid-July and early August, the sources said.

In return, the government of President Fidel Castro would be expected to take back about 2,700 Cubans with criminal records or health problems. Many of these people have been held in U.S. prisons or mental hospitals. In all, about 125,000 Cubans came during the 1980 exodus.

A State Department spokesman, John Hughes, said the U.S.-Cuba negotiations on immigration issues have been "serious and business-like" but he would give no details. "It would be premature to speak of any agreement," he said.

State Department officials cautioned that the talks cannot be said to be "close to agreement," as was reported Thursday in The Washington Times. While the talks have been going well, officials said, it is far from clear that an early agreement is possible. A third round of talks is expected but has not been scheduled.

By expressing willingness to re-

sume the processing of immigrants from Cuba as part of a broader arrangement, the Reagan administration has accepted one of the demands presented by Cuba before the opening of the talks.

The resumption of such legal immigration would find support among many people in the Cuban community in the United States, who have asked that family members still on the island be permitted to join them.

Wayne K. Smith, former head of the U.S. interest section, or diplomatic office, in Havana, said that as of early 1981 about 15,000 Cubans were entitled to preferential status for immigration because of requests by their close family members in the United States.

In addition, Mr. Smith said, the United States committed itself to accept about 1,500 former political prisoners who had been released from Cuban jails before a special prisoner-release program began with U.S. cooperation in 1979. Administration officials were unwilling to say how many Cubans might be permitted to immigrate in the event of an agreement.

British Unions Divided On Support for Miners

Reuters

LONDON — A new dispute opened in Britain's union movement Friday when the national leadership struck a deal to support coal miners in their 26-week strike.

Divisions also deepened in the weeklong national dock strike called to support the miners when longshoremen in the ports of Dover and Felixstowe voted to stay at work.

A program of limited support for the miners was approved by the general council of the Trades Union Congress to avert a split and possible violence at the annual conference of the TUC, the labor movement's national organization, next week in Brighton.

But the measures, including a ban on coal being moved across miners' picket lines, were rejected by the steel and electricity unions on the ground that jobs would be jeopardized.

"The idea is totally unworkable," said Bill Sims, the leader of the steelworkers. "If you are going along this line, you are almost going along with a general strike."

The general secretary of the council, Len Murray, said at a news conference that after talks that lasted into early Friday, the leader of the miners, Arthur Scargill, agreed to recommend the council's package to his union's delegates Sunday.

On Monday the council will recommend it to the 1,100 delegates, who are likely to approve it.

Under the deal, Mr. Scargill would still propose a motion committing the movement to "total support" of the miners, who are striking against plans to shut old pits and eliminate jobs.

But other unions would withdraw motions seen likely to cause uproar, including calls for a national "day of action" and a levy on all 10 million unionists to help miners.

The TUC would then promise to block the movement of coal across miners' picket lines at power stations, steelworks and other places, to support the campaign to save pits, and launch a fund-raising drive for families of strikers.

But the agreement acknowledges that success would require "agreement with unions who would be directly concerned."

Critics of the deal called it a sop to the miners that offered them no real help, a pact struck to avoid violence among 20,000 striking miners expected to descend on the south coast resort of Brighton for the conference.

Mr. Sims said he could not agree to a blocking of coal because "it would close my industry down."

In the dock strike, the second called in six weeks, dockworkers at Dover, Britain's biggest passenger terminal, and at Felixstowe, the biggest container port, voted overwhelmingly to reject their union's strike call.

That meant that only five of the country's 10 biggest ports were shut down by the strike.

An expected return to work at Tilbury in London failed to materialize. Liverpool, Southampton, Swansea-Port Talbot and Hull also remained strikebound.

Dover and Felixstowe joined Tees, Immingham and Harwich in refusing to stop work.

■ **Miners Attack Policemen**
Striking miners Friday threw bricks and planks at policemen when they tried to remove them from a coal dock in Wales, United Press International reported.

About 100 striking miners, wearing ski masks and some carrying pickaxe handles, fought their way onto a jetty used to bring coal and iron ore to the Port Talbot steelworks in south Wales.

The miners, who hope to stop all coal deliveries, climbed three cranes used to unload coal and threw bricks, planks, and nuts and bolts at police who tried to remove them. No serious injuries were reported.

Gasoline Price Rises 20% for Dominicans

Reuters

SANTO DOMINGO, Dominican Republic — The government has announced a 20-percent rise in gasoline prices and large increases in other fuels as part of an interim accord with the International Monetary Fund.

President Salvador Jorge Blanco, in a nationwide television address Thursday night, gave details of the long-awaited package of price increases that his government has had to accept in return for a six-month agreement for continued support from the IMF.

Before the announcement, thousands of troops throughout the country were put on alert in case of a repeat of the violent anti-IMF demonstrations in April that left 55 people dead. The police said more than 100 leftist activists had been rounded up in the last few days to forestall trouble. Labor factions had pledged a general strike against the increases. However, there were no reports of any incidents.

Apart from gasoline, taxes on petroleum products will rise along with those on a range of imported goods.

The agreement unlocks about \$200 million in U.S. aid but does not involve any immediate new disbursements from the IMF itself.

"This agreement will allow us to re-establish the country's international credit," Mr. Jorge Blanco said.

The interim agreement will last until the beginning of next year, he said, when talks are to start on an IMF standby arrangement to cover 1986. No loan amount was mentioned, although previously the IMF had insisted on economic targets for a renewal of a \$450-million, three-year credit.

Petroleum imports cost the nation about \$500 million annually, roughly half its annual income.

Israel Will Loan Kfir Jets to U.S.

The Associated Press

WASHINGTON — Israel will lend the U.S. Navy a dozen of its Kfir jet fighters to serve as mock enemies in air-to-air combat training, Navy Secretary John F. Lehman Jr. announced Friday.

It would be the first such arrangement by the United States. Mr. Lehman said that the Kfir jets "were offered to the U.S. Navy on a no-cost, four-year lease basis." Israeli Aircraft Industries will maintain the planes.

U.S. to Raise Federal Pay 3.5% in 1985

By Mike Causey
Washington Post Service

WASHINGTON — President Ronald Reagan has announced that white-collar government workers will receive a 3.5-percent raise in January.

Military personnel are expected to get the same increase, and they may get more if Congress passes pending legislation.

The 3.5-percent increase announced by the president in a message sent Thursday to Congress is automatic unless Congress overrides it and votes a bigger raise before adjourning for the November election. That is considered unlikely.

Under the new scales, the lowest starting salary would be \$9,339 a year and the top, at Grade 18, would be \$68,700. Salaries for members of the Senior Executive Service would range from \$61,296 to \$72,300.

The 3.5-percent raise is in lieu of an 18-percent increase that, under federal pay rules, could have gone into effect in October. The president had until Friday to submit an alternate recommendation.

According to data collected by the Bureau of Labor Statistics, government workers on average earn 18 percent less than people doing the same jobs in the private sector.

But the president's advisers told him that the government pay survey was too narrow in scope. He invoked that portion of the U.S. pay law that allows him to recommend a smaller increase in the face of "national emergency or economic conditions affecting the general welfare."

In a message Thursday to Congress, Mr. Reagan said he was ordering the 3.5-percent raise "after reviewing the report of my pay agent and the advisory committee on federal pay, and after considering the adverse effect that an 18.3-percent increase in federal pay rates might have on our continuing national economic recovery."

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ARTS / LEISURE

'Head to Head' at the Picasso Museum in Antibes

By Michael Gibson
International Herald Tribune

ANTIBES, France—The Picasso Museum in Antibes is a handsome, weathered fortress on the outmost tip of the peninsula, built by the Grimaldis when they were powerful merchant-princes and turned into a museum to receive a collection of works Picasso donated to the city after the artist had been offered the hospitality of the vacant palace one summer in 1946.

There is a permanent display of the works he donated, as well as temporary shows presenting works both by Picasso and by other artists. This summer's shows are devoted to Jean-Michel Folon and to a constellation of paintings, sculptures, drawings and engravings that all refer in some way to two large ancient sculptures of a woman's

head by Picasso that now belong to the museum. The heads are the tumescent transformation of that of Marie-Thérèse Walter, who, in 1927, at the age of 18, became the artist's companion and, in 1935, the mother of his daughter Maya.

Picasso spotted Marie-Thérèse in front of Galerie Lafayette, the Parisian department store. He introduced himself, but Marie-Thérèse, rather unexpectedly, had never heard of him. She found him to her liking, nevertheless, and in time, Picasso being then married to Olga, she accepted living with Picasso in Olga's shadow.

Their relationship lasted 20 years, and part of Picasso's production of the early '30s is inspired by her Grecian profile.

The interest of the little show—about 30 works dated from 1931 to 1933—resides in the diversity and also in the long-term progression apparent in this theme. The dominant pieces, the two ancient sculptures that are quoted over and over again in the other works, are en-

dowed with the strange and arbitrary brutality that so often marks Picasso's production.

Critics have compared them to "primitive fetishes," but that is an inaccurate description. A fetish refers to a supernatural force expressed in the strong formalization of its structure. Picasso refers to something quite different—to art history as a self-conscious process and to his own "will to power" as the motor of his artistic activity.

These overpowering and impenetrably inhuman heads assert this "divine right" of the artist to create a raw enigma and thrust it upon the world. There are some more classical pieces and also others that are even more explicitly full of reference to genital forms. Unfortunately, the catalog gives no indication of the order in which the sculptures were produced. But the enigma of human sexuality as an inarticulate drive does seem to be the underlying motive of these works.

That seems apparent in the latest works that refer to these two monu-

mental pieces—a sequence of engravings (1933) in which a sculptor and his model, both of them "classically" rendered and nude, sit contemplating the strange work set before them on its pedestal. Here only the sculpture is inhuman—the artist and his model are rendered in soft and flowing lines, poised at the base of this inexplicable divinity.

The Folon show consists of 200 watercolors, engravings, tapestries and objects produced between 1970 and the present—the bulk of the show being composed of illustrations for the writings of Boris Vian, Jacques Prévert, Guy de Maupassant, Guillaume Apollinaire, Jean Giono and Jorge Luis Borges.

Folon's hues in recent years have become more pastel, but the manner is always characteristic and easily recognizable. His spectacular career as an illustrator, designer of book and magazine covers, painter of posters and inventor of animated cartoon titles for TV programs

have made him a familiar figure to the broadest possible public.

Chances are that he is as well known today as, say, Picasso. But this is something of a drawback too, because we have seen Folons everywhere—and have seen them in the specific medium for which they were conceived: the four-color printed page. This is equally true of many of the works in the present show—the works intended to illustrate the books of the authors just mentioned.

In a way we expect these low-key, gently fanciful works (Folon himself is a mild and gentle person) to be multiplied a thousandfold and sent out through the world. They belong to the age of mass communications even as they comment with quiet irony on the distress that this age produces. And so they are a form of popular language that is designed to be instantly perceived by the very opposite of Picasso's brutal esthetics.

"Picasso Tête à Tête" and "Folon," Musée Picasso, Antibes, both to Sept. 30.



Painting of the artist contemplating a bust of Marie-Thérèse (detail), 1931.

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Earthly Misery Dominates Early Venice Festival Showings

By Thomas Quinn Curtiss

International Herald Tribune

VENICE—The 41st Venice Film Festival appears in its opening stages to be devoted to the grim happenings: the grinding of the Italian peasantry under Mussolini in "La neve nel bicchiere" (A Glass Full of Snow); the Nazi persecutions reviewed in retrospect by Thomas Harlan, son of the notorious Nazi director Veit Harlan, in "Execution with Four Voices"; Poles attempting to emigrate from Poland after the "liberation" in Krzysztof Zanussi's "The Year of the Peaceful Sun"; Philippine nuns joining in the struggle for social reforms in "Sagandanan," and the massacre of untouchables in India in Gautam Ghosh's "Paar" (The Beyond).

These exposures of human miseries are all well-intentioned and one hopes salutary, but coming one upon another without relief they provide a monotonous diet. One of the initial offerings is a hybrid product: "Maria's Lovers," shot in the United States in English by the Russian director, Andrei

Konchalovsky, with the German actress Nastassia Kinski as its heroine.

It is always instructive to see ourselves as others see us, and the scenario in question takes us to a community in rural Pennsylvania that has a population largely of Russian extraction and of Dostoev-

skian gloom. Its protagonist is a GI returned in 1946 from the war in the Pacific in which he has suffered a severe mental damage. What he has is a dark vision of the theme of the homecoming soldier that was exploited optimistically in the 1946 movie "The Best Years of Our Lives." The Konchalovsky transposition of the situation might appropriately be called "The Worst Years of Our Lives."

Its subject, Ivan Bibic (John Savage), weeps his boyhood sweetheart, the girl of the title, but he is unable to consummate the marriage as his war experience has rendered him impotent—at least as far as his bride is concerned. He leaves her,

and Maria, a healthy young flirt, is seduced by a strolling minstrel. The birth of her baby by the minstrel curiously brings her wandering husband back to the hearth cured of his impotency.

Savage as the troubled former soldier maintains a worried look throughout, probably as mystified by his locked-up secret as the spectator. The film's best feature is Kinski with her accentless English and her willingness to perform scenes usually not asked of an ingenue, such as the self-defiling episode.

There is a slick bit by Keith Carradine as the brash, guitar-strumming seducer, and Robert Mitchum plays the boy's boozey father, but he is infrequently seen. Konchalovsky's first American effort is an experiment rather than an achievement.

In "The Year of the Peaceful Sun," Zanussi, a Polish director, has also selected an American soldier as his hero and has taken for his background the retrieved territories of Poland, under Soviet domination, in the period immediately after World War II. The hero is a U.S. Army officer who betrays two women who lost all in the havoc—the mother her health and

home and the daughter her husband. He falls in love with the daughter and urges her to emigrate, but their hopes are shattered. There are excellent performances by Maja Komarowska as the daughter, and Hanna Skarzynska as the mother, and an acceptable one by Scott Wilson as the helpful officer, but the film would benefit from compression.

It was a theory of the playwright, Pinter that audiences must be told everything at least three times. The cinema has adopted the Pinterian opinion as law and enlarged upon it. The result of needless repetition is that virtually every film today runs long with its theatrical urgency dulled.

"Uno scandalo per bene" (which will bear the title, "Only for Love"), in its English language release, is an example of that practice. Con- tending as an Italian entry in the Venice prize competition, it has an interesting script by Suso Cecchi d'Amico. An amnesia victim, unable to remember who he is, is undergoing treatment in a mental clinic. His photograph appears in the newspapers and various families claim him as a relative who disappeared in World War I.

The general idea recalls Pirandello's "As You Desire Me," but Pasquale Festa Campanile's direction lends the material a fresh approach. For the first hour it holds attention firmly. Thereafter it tends to overplay the contents of its complicated plot and weakens dramatically. Ben Gazzara as the bewildered man who has forgotten his past and Giuliana de Sio as the woman who struggles desperately to build him up by acting of the first order, and the supporting performances, too, are commendable. Despite its decline in its last half, it is superior to the dozen other films that already have been screened here.

Empire Objets d'Art Due for Surge

International Herald Tribune

WHENEVER an upward movement affects a broad area of the market, some categories are left out at first. Despite the tide that has been carrying neoclassicism, its French variety, the Empire period (1803-1815), has been bypassed.

Extraordinary contrasts in prices may be cited. In June 1983 a mahogany dining table made around 1840 by Johnstone Jupe & Co. of New Bond Street soared to an extravagant £35,200 at Sotheby's sale of English furniture. The circular top supported by a squat shaft resting on four sinuous legs terminated with claws reproduces a model executed thousands of times. A number, 1399, stamped on the underside with the name of the firm suggests large-scale production. Even in that perfect condition a third of the price would have been generous.

Such windfalls have yet to benefit Empire furniture and its continuation into the reign of Louis XVIII (1815-1824). How inexpensive the best of Empire furniture and decorative objects d'art still are can be measured by the prices paid last March at a Dromot sale conducted by the auctioneer Christian Delorme.

The items came from a private collection that, in keeping with French obsessively secretive tradition, was not identified. Several had been reproduced in art books and magazines for their rarity. A secrétaire, or cabinet, with a drop-leaf front designed like a mahogany pedestal and a door opening on the left side is illustrated in the "Le XIXe siècle Français," published by the French monthly Connaissance des Arts many years ago. It went for 110,000 francs. The price left the small dealers goggle-eyed because run-of-the-mill Empire secrets usually go for a tenth of that. But there are thousands of these, whereas the pedestal cabinet seems to be a unique model. Seen in the context of what has been happening to top-notch 18th-century furniture on the one hand and to neo-Rococo furniture of the latter half of the century on the other hand, the Empire cabinet was cheap.

Another important lot in that sale may be considered cheaper still. A small rectangular mahogany table on X-shaped steel legs with ornate capitals of Egyptian inspiration at the top and ornate leaves

and ball tips at the bottom, it is perhaps the most beautiful piece of furniture created by the French cabinetmaker Alphonse-George Jacob-Desmaltre the son of the great Georges Jacob who worked for Marie Antoinette.

While the model was sufficiently admired to be repeated several times, this specimen had been kept for his own use by Jacob-Desmaltre. He eventually gave it to his son's fiancée, Hortense Balin, in-

laying the top with her future marital monogram "H.J." A note of Jacob-Desmaltre's granddaughters confirms the facts, thus documenting the splendid museum piece. It sold for a mere 200,000 francs.

Even more startling in that sale was a set of four mahogany fauteuils inspired from the Roman curule chair. These were done by Georges Jacob. Probably executed in the opening years of the 19th century, they would grace any museum of decorative art. At 290,000 francs, the set is one of the year's best buys.

Some of the best Empire objets d'art were inexpensive too. At the beginning of the sale a pair of vases reproducing the Greek crater shape—squat high-shouldered vases with short outcurving necks—matched in quality the furniture. The gold acanthus leaves alternating with black lotuses at the bottom and eagle heads rising from the shoulders to serve as handles gave it the monumental quality favored by Napoleon I. The pair, 44 centimeters high, went for 44,200 francs.

This is not a great deal. By way of comparison, a pair of Russian vases in a style derived from the French Empire and made hybrid by the insertion of scenes painted after the 18th-century artist Nicolas Lancret were sold for \$68,200 in New York in February last year. True, they were bigger—146 centimeters high—and more suitable for the flashy decoration currently favored by a new wave of buyers from such different quarters as the Gulf, the United States and South America.

A variety of reasons account for the disparity in price between the French Empire and English Regency styles, and the Empire objects d'art and their kitsch interpretations two generations later.

The Regency style has benefited

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Europe Asserting 'New Independence'

(Continued From Previous Page)

Political motivations, influenced by growing unemployment and heavy trade deficits, also are driving the Europeans. Top industry and government officials in London, Paris, Bonn and Brussels are not bashful about telling American visitors that they view the U.S. market for civilian and military aircraft and equipment as highly protected; that they consider the Reagan administration heavy-handed in its dealings with the allies over transferring technology. But what matters most, Europeans say, is their determination to build a modernized industrial base from which to compete head on with both the United States and Japan in the years ahead.

Officials note that a total of some 500,000 jobs are at stake in the major European aerospace companies, many of which have cut back employment levels because of stagnation in orders at home and in such key export markets as Latin America and the Middle East. Many European aerospace companies foresee no recovery until the end of 1986, at the earliest, and they emphasize that their intention is to be positioned for the expected pickup.

Cooperation among European aerospace companies is not new. During the last two decades, France, Britain and West Germany have established about a dozen major cooperative ventures, some with outside partners, and each have been actively supported by their governments. These include the French-British Concorde, the European Space Agency's Ariane launcher, the Alpha, Jaguar and Transall military planes, the Airbus jetliner, the French-Italian ATR 42 commuter plane, the Euro-missile marketing firm that handles Roland and other French-German missile systems, and Europe's largest cooperative venture yet, the

Tornado fighter-bomber. A spokesman for Panavia, the British-German-Italian consortium that has already delivered 360 Tornados, (out of a total 809 planned during the program's 20-year duration ending in 1989) noted that each plane contains only 3 percent U.S. technology, mainly the radar equipment.

"In a sense, the Tornado is the model," said a senior executive of British Aerospace, one of the leaders in the project, adding quickly that "what is lacking in our latest venture, the new fighter, is a French dimension and that is being actively negotiated."

Amid looming problems of financing and heated disagreements over work division among the Europeans, notably between France and Britain, a wide range of new cooperative ventures are currently shaping up for implementation in the 1990s. They include the following:

• The new tactical fighter known as the Future European Fighter Aircraft, or FEFA. At their July meeting, defense ministers of Britain, France, West Germany, Italy and Spain, signed an agreement to prepare a feasibility study, which they will take up at their next meeting in March. Developing and building some 1,000 FEFA's, including 300 for export, could generate more than \$30 billion in orders for the five countries that want to participate. Assuming the program materializes, the first fighters would be operating by 1995, replacing British-French Jaguars in Britain and later, McDonnell Douglas F-4 Phantoms in West Germany and Mirage fighters in France.

The project is beset by major controversies, however, which if not resolved could threaten its future. A crucial issue is design leadership. France's state-controlled Dassault-Breguet, which plans to fly its demonstration model in 1986, believes that it is best quali-

fied to direct the development of the airframe, and is urging that FEFA's design office be established in Paris. French government officials also insist that Dassault has an excellent track record on exporting its planes, notably Mirage jet fighters, and note that the Tornado has yet to land a single export order.

French officials also have repeatedly emphasized that Paris is determined that the new fighter project be European.

Meanwhile, British Aerospace argues that leadership and headquarters should be in the United Kingdom, and has warned that Britain may pull out if it does not obtain an equal role in the project with France and West Germany. British Aerospace officials note that its demonstrator plane also will be flying in 1986 and that it will have an all-European engine: the RB-193, which is used in the Tornado and is manufactured jointly by Rolls-Royce of Britain, the MTU engine company of West Germany and Fiat Aviazione of Italy. The Dassault demonstrator will use General Electric GE-404 engines.

However, France's state-owned SNECMA is developing its engine candidate, the M-88, for use when the FEFA program is established.

Government and industry sources on both sides of the Atlantic view the controversy over the FEFA as the latest and a major test of Europe's ability to cooperate, but they feel that, ultimately, it will be resolved by political leaders, probably France's President Francois Mitterrand, West Germany's Chancellor Helmut Kohl and Britain's Prime Minister Margaret Thatcher. Most sources said they expected the project, among others, to be the focal point of intense discussions during the Farnborough air show, which begins September 2.

• A new military transport plane, known as the Future Inter-

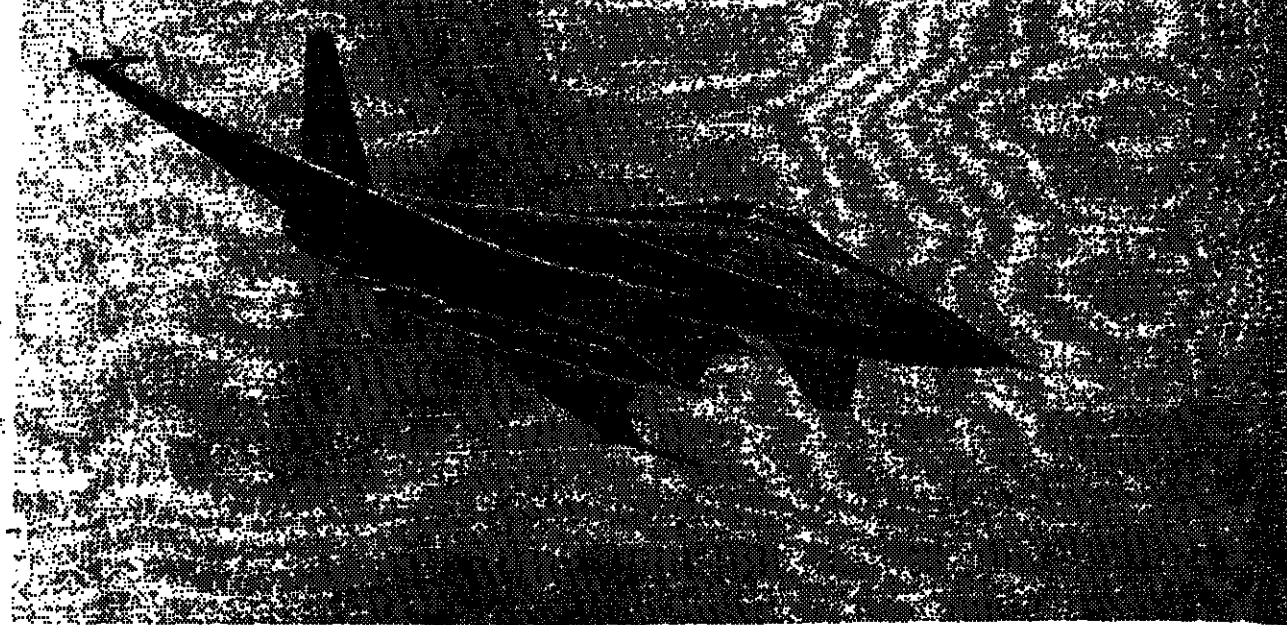
national Military Aircraft, or FIMA. The project is still at the preliminary industry study level, involving Lockheed-Georgia of the United States, British Aerospace, France's state-owned Aerospatiale, and West Germany's Messerschmitt-Bölkow-Blohm. The basic idea is to develop a new transport plane to replace existing fleets in the United States and Europe, which include Lockheed's C-130 Hercules and Transalls made by Aerospatiale and MBB.

"Our military transport planes are aging and too small and we are seeking a condensed version of all our needs, by around 1995," an executive of the French company said, although he readily conceded that Lockheed, because of the substantially larger U.S. market, probably will play a dominant role in the project. "They probably would take two-thirds of the hundreds of planes we eventually produce," he said.

Sources close to FIMA said that a first draft report on the industrial feasibility of the project will be completed by the end of this year. They emphasized that the plane could be designed to incorporate a key, European requirement: an early-warning system currently available only in Boeing AWACS and Grumman Aerospace's E-2C Hawkeye planes.

FIMA is one of the very few examples of emerging trans-Atlantic cooperation, along with several aircraft engine projects for passenger planes in which United Technologies and General Electric in the United States are participating. Europe also is cooperating with U.S. National Aeronautics and Space Administration in several ventures.

• Space projects of the European Space Agency. Two key programs were approved by ESA, which could provide Europe with its first permanent manned space facility and to cooperate with the United



The West German version of what the Luftwaffe may be seeking for its needs to replace the F-4s in the next decade.

States in its space station program. These include a projected space station, known as Columbus, which would develop modules and systems for use with the planned station of NASA but could be expanded into a European station during the 1990s.

Columbus was proposed by Germany and Italy, which independently financed initial development work on their own.

Largely at the urging of France, ESA also will now develop a new cryogenic engine, known as the HM60, which will be designed to power the Ariane 5, a new highly advanced version of the present Ariane launchers that France is also proposing to other ESA members. Backed enthusiastically by Laurent Fabius, France's prime minister, the engine project is a key first step, whose estimated development costs will total about \$140 million.

Final approval of both projects

are expected when ESA's member governments meet in Paris during October. Industry sources estimate that the projects will require a total \$220 million in financing.

President Mitterrand also has proposed that Europe establish a military satellite program for its future defense needs, but this has not yet taken concrete form.

• Helicopter projects, notably a new French-German attack helicopter, known as the PAH-2. Mr. Mitterrand and Mr. Kohl signed an agreement on May 29 to jointly develop the second-generation helicopter, which will require about \$750 million in outlays during the next eight years. The first prototype is scheduled to fly around mid-1987 in what has been presented as a major breakthrough in cooperation between the two governments. Although Paris and Bonn have jointly established successful aerospace programs, they have repeatedly failed to agree on the joint construction of a new battle tank.

The memorandum also specifies that the PAH-2 will use a new engine, which will be jointly developed by MTU and Turbomeca of France, and that both projects will be directed by joint companies based in West Germany and France.

Rolls-Royce and Turbomeca agreed earlier this year to cooperate in still another European helicopter project, known as the RTM 322. It will be a candidate for use in a helicopter being developed by Westland of Britain and Agusta of Italy, the EH101.

Meanwhile, MBB, which is a key participant in the French-German project, is already planning cooperation with Westland, Aerospatiale and Agusta to develop a third-generation helicopter for the 1990s, known as the TH-3. In what is widely viewed as its bid for design leadership, MBB has suggested that its highly successful BO-105 helicopter, which first flew in 1962,

should become "an MBB study" for the new helicopter.

While most of the European projects are proceeding on schedule, the controversy over the FEFA still could result in its failure, with important repercussions for the United States. Indeed, a senior West German Defense Ministry official emphasized in a recent interview that Bonn has not ruled out some form of cooperative arrangement with the United States, or even an outright purchase of a new U.S. aircraft. "Germany will cooperate with its European partners to find a joint solution, but we will keep our options open," the official said.

What alternative might be acceptable to the German government? "An engine made here, for example, the rest bought elsewhere, like in the United States," he said. "Insofar as Germany is concerned, the final decision has not yet been made, although like the French, we will be striving for a European solution."

Safety in Number of Engines? Ruling in U.S. Is Expected to Clarify Issue

By Bob Burkhardt

WASHINGTON — Is there really air safety in numbers? Are three or four, or more engines on an airplane safer than, say, two engines?

The Federal Aviation Administration, air transport's safety watchdog agency, is seriously considering this question and will soon issue a ruling that clears the way for airlines to operate twin-engine jet transports nonstop across the North Atlantic.

Trans World Airlines, in anticipation of this ruling, recently ap-

plied to the FAA for permission to use its twin-engine Boeing 767s in regular trans-Atlantic operations starting October 28.

TWA's fleet includes 10 B-767s, all of which can be easily modified for trans-Atlantic service. They would be particularly useful during the slack winter months when traffic does not justify flying jumbo B-747s between New York and London, as well as to other points in Europe.

The principal advantage of using a two-engine plane is financial. Airlines flying the North Atlantic are under considerable economic

pressure from such cut-price competitors, as People Express and Virgin Atlantic.

Being able to use a twin on long overwater routes "would present economies of operation, certainly in the off-season, or on long, thin routes," a TWA official said.

Other airlines — El Al Israel and Air Canada are being mentioned — are watching to see if the FAA approves the TWA application for an exception to the 30-year-old rule, which says that transport jets having fewer than three engines may not operate over water on a route that "contains a point farther than one hour's flying time [at one engine out airspeed] from an adequate airport."

This is an FAA rule, first put into effect in the days of noisy, complicated piston engines. Engine failures were not exactly common, but they happened often enough to make the FAA cautious even when approving three-engine aircraft for long overwater operations.

In 1964 the International Civil Aviation Organization adopted a rule that said that four-engine aircraft could not fly routes that were at any point more than 90 minutes' flying time from an adequate airport after failure of two engines.

Now ICAO has a world standard that says that twin-jet transports may be used for overwater flights if they can reach an adequate airport in 90 minutes on one engine. The FAA is now expected to bring its

rules into conformity with the rest of the world.

This can be done because of the great reliability of the turbine engine. A Boeing study on power-plant dependability found that over the last 25 years a 200-plane airline fleet of modern twin jets, flying 3,500 hours a year per plane, might experience a double engine failure for unrelated causes once in 2,000 years.

In cases where the cause is the same — most commonly running out of fuel — then all engines stop running of course and it does not matter how many engines there are on the airplane.

Boeing, which is pushing the FAA to make the rule change, also notes that crises are the safest part of a flight. Most engine failures occur at the high stress periods of takeoff, climb, descent and landing.

One of Boeing's newest models, the 767-ER (extended range) earlier this year was delivered to Ethiopian Airlines from Dallas Airport nonstop after a flight of 13 hours 17 minutes. The distance was some 7,500 statute miles.

In normal commercial service, Ethiopian's 767ER will carry a full payload of 201 passengers and will have a range of 4,400 nautical miles. On the record-making delivery flight, the Pratt & Whitney powered B-767 maintained an average speed of 541 miles per hour and burned 122,600 pounds of fuel.

El Al, which has modified its B-767s to meet the ICAO standard is already flying nonstop 5,000-mile Montreal-Tel Aviv flights when wind and weather conditions permit.

Air Canada, which will take delivery of a B-767ER in October, says it needs the aircraft for its scheduled nonstop flights from eastern Canada to the Caribbean.

In addition to the B-767, the Airbus Industrie A300 several years ago received a waiver from the FAA so Eastern Airlines could fly nonstop Caribbean flights. With Boeing now pressing hard for a waiver that will cover both the B-767 and the B-757, Airbus finds itself in an anomaly.

Having used the FAA's exception process to allow Eastern to use the A300 on long overwater flights — particularly New York-San Juan — Airbus Industrie said the exception process should not be used by Boeing to allow the B-767 to make nonstop trans-Atlantic overwater flights.

"It is a good time now for the FAA to change the rule," said Bernard Ziegler, vice president at Airbus Industrie. "But to make such an important change we think it is important to go through the rule-making process."

The FAA takes a long time to change its basic rules since it tries to listen to everybody that might have an interest in the change. Boeing, of course, resists this. The

man at Boeing pressing for an FAA exception for the B-767 is the company's vice president for government technical liaison, John M. Swihart.

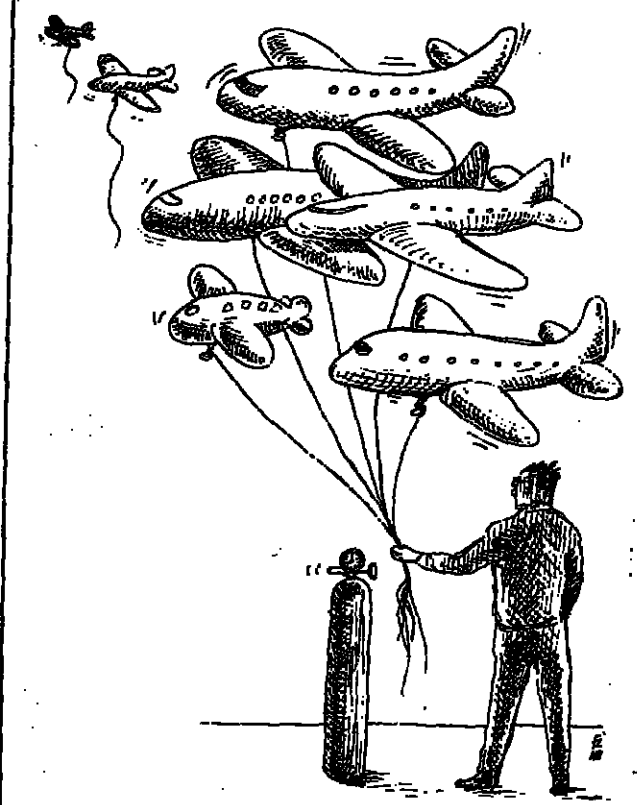
He said that the FAA's present rules "do not take into consideration present airliner design, technology and capacity" as well as "modern weather forecasting, airport facilities, navigation aids and long-range facilities."

The FAA has the authority to grant exceptions to their 60 minutes' rule and should do so, Mr. Swihart said. The agency apparently agrees. In its 22-page "advisory circular" the agency says any twin jet seeking "airworthiness and operation approval" for extended overwater operations must meet the FAA's "fail-safe design concept."

Older B-767s can meet the design concept through modifications that must include additional backup systems, particularly for electrical supply, as well as "isolation of systems and components so that failure of one element will not cause failure of the other."

Meanwhile, in California, an innovative aircraft designer, Burt Rutan, has engineered and built a twin-engine plane that will carry a crew of two nonstop around the world, and along a route that is almost entirely over water.

His plane, "Voyager," will be almost 80 percent fuel by weight

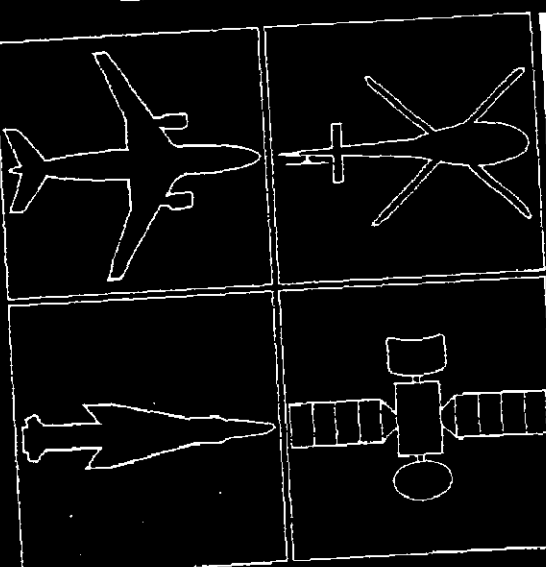


when it takes off from the world's longest runway at Edwards Air Force base next spring. The crew of two will consist of Mr. Rutan's brother, Dick, a former Air Force fighter pilot with one endurance record to his credit, and Jeana Yeager, also an experienced pilot.

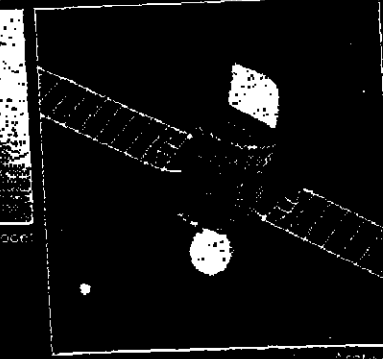
Their plane has a wing span almost the same length as the B-767, but it will be many thousands of pounds lighter even with its heavy fuel load. The Rutan plane will be powered with two piston engines for the 25,000-mile, 95-percent overwater flight.

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The High Stakes In Satellite Race

(Continued From Page 7)

covery, was perched on the same launch pad in Florida, waiting to take off. The countdown proceeded to the final seconds. And abruptly stopped. The next day, NASA tried again. Across America, the break-fast-time television programs switched to a live feed from the Kennedy Space Center. The rockets fired. Then they stopped. The shuttle stayed on the pad.

The Americans are gloomy at the year's failures in the shuttle program. They could not have come at a worse moment. Because for the first time since the dawn of the space age, the Americans have lost their monopoly as the non-Soviet bloc's single satellite-launching administration.

But NASA's main competitors, a consortium of European aerospace companies led by the French, are as joyful as the Americans are grim. After pulling their Ariane satellite-launcher program through some early teething troubles, the European Space Agency and its affiliated marketing group, the Arianespace Company, have produced a spotless record of launching successes this year, including the first launch by a European rocket of an American communications satellite.

From its launch base in Kourou, French Guyana, the Ariane has put into orbit a large communications satellite for Intelsat, the global satellite for Eutelsat, the organization of European telecommunications authorities.

The last two were launched on the Ariane 3, a new and improved version of the Ariane that can project two satellites into space at once. Arianespace has recently capped its successes by announcing another firm order to launch an American satellite, from Satellite Business Systems, the American communications company in which IBM has a majority stake.

Vast sums are at stake in the space transportation business. There are lots of wild estimates of the scale of the satellite-launching business between now and the year 2000. But even the "low" estimate produced by a team of satellite experts at the Battelle Labs in Columbus, Ohio, forecasts a market to launch 437 non-Soviet bloc satellites between 1984 and 1999; their "high" model suggests the number could be 823. (Significantly, the numbers exclude military satellites. So the market is actually bigger.)

A very rough estimate, assuming an average \$50-million price tag for each launch over the period, is that the payloads are worth \$22 billion under the lowest estimate and almost twice as much under the high model.

Battelle's forecast predicts the shuttle will launch at least 42 percent of non-Soviet, non-military space cargo through the year 2000. Battelle believes that Ariane can expect to win at least 15 percent of the market and will compete with the shuttle for 28 percent of the payloads. Battelle believes that other launchers, being developed by the Chinese, Japanese, Indians and some American private companies, and the few remaining expendable launchers to be used by NASA, can together expect a 15-percent market share of payloads.

The competition between the shuttle and Ariane is focused on the 28 percent of payloads that Battelle considers up for grabs. These payloads can be said to be worth (very approximately) more than \$11 billion under Battelle's high estimate of demand and \$6 billion under its low estimate.

In order to win the business, both NASA and Arianespace are cutting prices to the bone. Indeed, the competition between them is so savage that it may preclude the entry of private companies into the space transportation business. One such company, Transpace Carriers, still hopes to win a share of the future launch business, using the McDonnell Douglas Delta rocket system that was a workhorse of NASA's before it was phased out in favor of the shuttle. But Transpace claims that it is being hurt by unfair competition and has filed a complaint against Arianespace with the International Trade Commission in Washington. Transpace claims that Ariane prices are subsidized and that it is selling launches to American carriers for a price lower than the one charged to members of the European Space Agency.

The Europeans only ritualistically deny that Ariane is subsidized. Privately, they admit it is, and shrug their shoulders. So is the shuttle, they say. Curiously, at NASA, the reaction is exactly the same: a ritualistic denial, followed by the claim that, "so is Ariane."

So for the satellite operators, therefore, the situation is a happy one. No matter what launcher they select, the price is subsidized (currently about \$30 million to launch a similar satellite on either system, with the price expected to edge up to around \$50 million over the next few years.)

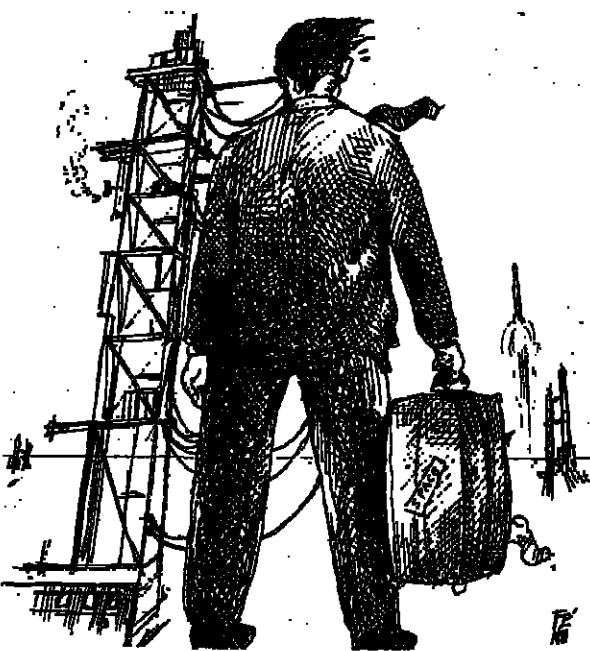
On a technological level, the differences between the shuttle and the Ariane could not be more pronounced. While NASA's system has extraordinary potential, its shuttle is complicated because it is manned and because it is reusable. This has not made it reliable. NASA is far from establishing the 24-launch-per-year schedule that it originally claimed would constitute an "operational" shuttle program.

NASA, too, has not yet perfected the business of moving cargo from the shuttle to higher altitudes. Because the shuttle only flies a few hundred miles into space, high-altitude satellites (including all communications satellites) must be ejected from the shuttle, to be propelled to the proper orbits by mini-rocket upper stages. These upper stages, as the owners of Westar 6 and Palapa B-2 can attest, are not yet foolproof.

Where the shuttle is complicated and ambitious, Ariane is simple and traditional. Based on a concept identical to that used by the Germans to produce the V2 rocket during World War II, the three stages of the Ariane can boost a communications satellite directly to a 22,300-mile service altitude, where the satellite is synchronous to the rotation of the earth.

There is more to the competition between the shuttle and the Ariane than money. National and European community pride is at stake. Irrespective of whether the next big thing in orbit proves to be direct satellite broadcasting, space stations, spy satellites or pharmaceutical factories, space transportation will remain the essential prerequisite for nations to exercise sovereign projects in space.

But the most important thing to remember for the future of space transportation is how fickle it all can be. Now that Ariane is working so well, the only thing that its backers cannot ignore is their fear that a chain of disasters could turn the table. Rocket systems are notoriously pesky, and the Ariane itself has had a colorful childhood.



Left, the first use of SYLDA, Ariane's dual launch system; right, the spacelab on board the U.S. space shuttle.

(And Now) the Spaceman in the Gray Flannel Suit

By Theresa Foley

WASHINGTON — Having lost the race to put the first man in space, the Americans are aiming for a different distinction. When the space shuttle Discovery blasts off from the Kennedy Space Center on board will be the world's first space businessman.

Charles Walker, an engineer employed by the McDonnell Douglas company of St. Louis, is the first of what is expected to become a large group of civilian astronauts who will be lifted into orbit with the sole objective of making money for their employers.

Mr. Walker's assignment will be to operate a miniature space factory. Using a biological-separation process called electrophoresis, the factory, owned by McDonnell Douglas in a joint venture with the Johnson and Johnson company, will produce exotic phar-

maceuticals that can only be economically manufactured in the microgravity of space. If his mission succeeds, the materials he produces will be used in clinical testing later this year.

Mr. Walker's space mission is the most visible element in what has become a broad American policy objective of commercializing space. Encouraged by the Reagan administration, there is a new wave of enthusiasm in America for both entirely new space enterprises and for the privatization of space activities that have until now been the monopoly of the government itself.

Space commercialization is a broad term that covers many specific activities. Until now, the only truly successful profit-generating commercial space activity has been communications satellites. The Reagan administration hopes that the success of commercial

satellite communications can be repeated by private-sector investments in earth observation satellites, space transportation systems and materials processing.

But a host of political and economic problems have made the broad commercialization of space seem like a long-range objective rather than an immediate prospect. The administration's hopes to privatize the nation's weather satellite system ran into a storm of protest in Congress. The more limited goal of turning over only the earth-exploration satellites (or remote sensing satellites) is running into problems because it appears certain that large government subsidies will be needed to make the proposition attractive to private enterprise.

The American intention to exploit the final business frontier has been greeted with some skepticism. At a

conference on space business opportunities sponsored by the American Embassy in Switzerland earlier this year, Wolfgang Demich, an analyst with the First Boston Corporation, a securities and investment firm, dismissed the notion that tomorrow's space factories are just over the horizon.

He said that shortcomings in the space shuttle, particularly the limits on the time it can spend in space and the amount of electricity it can provide, mean that it does not provide companies with a good basis for doing business in space. "The spare power available [on the shuttle] is only about enough to run a toaster, a tea kettle and an electric skillet all at one time, without popping a fuse," he said. "While this is adequate to make breakfast, it is clearly more suited to meet

(Continued on Next Page)

U.S. Manned Space Station Now Running Behind Schedule

By Anita Schrodt

NEW YORK — In January, President Ronald Reagan issued what has come to be called the "space station initiative" — that the United States would have a manned space station in operation within the next decade.

Within three months, there had been dozens of special conferences, some privately sponsored and some government sponsored, on the "space station initiative." Despite the possibility of Congressional and bureaucratic delays, potential changing of the guard at the White House and the ongoing dispute over manned vs. unmanned, a space station appears to be the next logical step in the U.S. space program.

There has already been a slip in the timetable, with the National Aeronautics and Space Administration running about two months behind its original schedule for issuing requests for proposals on two-year design and definition contracts.

All told, a U.S. space station, manned by a crew of six to eight, will mean some \$8 billion (possibly more) in U.S. government funds distributed to private industry, not to mention privately funded programs linked to an operating space station.

On top of that could be another \$4 billion or so in space station projects from foreign participants, most likely Japan, Canada and the European Space Agency. The U.S. Congress has appropriated \$150 million for the 1984-85 fiscal year to get the space station off the ground — or at least, onto the drawing boards. Those funds will provide initial payments on what will ultimately be about \$800 million in preliminary design and definition contracts, viewed as the crucial element in the 10-year program, according to NASA.

In its authorization bill, in part to overcome objections from the scientific community to the manned element of the space station, Congress clearly stipulated that NASA give substantial attention to the development of automation and robotics in space station development.

"We're attempting to put a program together to determine how much man and how much machine," said one top NASA official. "Our drive is to push automation and robotics as fast as we dare."

The scientific community, which also objected to the man-on-the-moon aspect of the U.S. space program in the 1960s, has maintained that permanent manning of a space station represents unnecessary expense.

However, NASA-commissioned studies have indicated a marked preference by the potential commercial users for permanent manning of a space station —

not to mention the traditional "national pride" factor of man in space, which has been part and parcel of all previous Congressional funding considerations for space programs.

Some companies already embarked on shuttle-related space ventures have expressed enthusiasm for an unmanned space platform at the least — the "free flyer" such as the Leascraft platform under development by Fairchild Industries — but even more preferably, a manned space station. Even Fairchild sees benefit to a manned space station for rendezvous with its Leascraft, now scheduled for launch into permanent low-earth orbit by the shuttle in late 1987.

"One problem we face right now is that the Leascraft has to operate in conjunction with the shuttle," said Emanuel Fithenakis, vice president at Fairchild Industries. The U.S. Department of Defense has the right to pre-empt all or part of a shuttle flight.

"We know NASA will bend over backwards for us, but there's no way to guarantee revisit" to the Leascraft if a shuttle flight is bumped by the military, Mr. Fithenakis said. Visits to the Leascraft from the space station are more assured, he said.

"The space station will be a substantial aid to the commercial side of an operation like the Leascraft, not a competitor," he added.

Microgravity Research Associates, a Texas firm developing a production unit to grow gallium arsenide crystals in space, said a space station will resolve the limited power restrictions it faces on the space shuttle alone.

McDonnell Douglas, which has already flown on the shuttle with its continuous-flow electrophoresis production of pharmaceuticals, a joint venture with Johnson & Johnson, estimates that it could develop 15 new products during a 10-year period on a permanent manned space station, compared to only about three new products in the same time period on shuttle flights.

Furthermore, the company estimates it could cut production time from one to two years on a shuttle to a "few months," according to Charles Ordahl, vice president of space programs for McDonnell Douglas Astronautics Co., on a space station.

NASA is now hoping to issue its RFPs — requests for proposals — for the design and definition contracts in mid-September. The agency is splitting the work into four work packages, ultimately to cost the government about \$800 million, and hopes to award at least two contracts, to competing firms, for each package.

About 40 percent of the budget will go toward the largest package, which will be administered by Mar-

shall Space Flight Center in Huntsville, Alabama, and will cover space station modules and common modular design, thermal control, data systems, pressurization, propulsion systems and links to orbital transfer vehicles and orbital maneuvering vehicles.

The other three work packages will cover architecture and assembly, utility integration, altitude control systems, shuttle interface, provision for two unmanned platforms, one in the station's orbit and one in polar orbit, compatibility to platforms and attached payloads, marketing and utilization; and the power system.

NASA officials say the contract bids will probably be submitted in mid-November and the contracts awarded about the first of April next year.

Lockheed Corp., with its extensive background in solar power, appears to be a leading contender for the power part of the space station package. Lockheed Missiles and Space Co. designed and built the solar array wing, slated to fly on the shuttle and be repeatedly deployed with the August 30 mission of the Discovery.

The wing was not fully outfitted with solar cells; most of the mission was designed to test the folding and unfolding of the 105-foot wing, an exercise that Gary Turner, program manager for the solar array project, called "the first legitimate use of the shuttle as a structural testbed for building blocks for the space station."

Lockheed officials, looking at possible Lockheed participation in space station contracts, noted that the company has developed concepts for automatic assembly systems that could construct a space platform the size of three football fields in two days.

"We're very interested in the space station," said D.M. Tellep, president of the Lockheed Missiles and Space Co. "Our strengths are in power and utility; we have a broad capability in large space structures."

Also, Lockheed's research and development facility in Palo Alto, Calif., has done extensive work in biotechnology. Lockheed would, as Mr. Tellep noted, be interested in developing any lab module associated with biotechnological experimentation.

Another leading contender for space station contracts is McDonnell Douglas Astronautics Co., which designed and built what was originally slated to be the space station served by the shuttle — Skylab. The California division of McDonnell Douglas Corp. is already coordinating a NASA contract on computer systems for the station and working on tools for hands-on maintenance of space vehicles and platforms by astronauts, as well as the overall station concept.

Another firm keenly interested in the future of the space station is Space Shuttle America, a new company affiliated with Astrotech International. The company has submitted a proposal to NASA to buy the fifth shuttle for \$2 billion and possibly even other orbiters. The space station would generate a lot of to-and-fro business for any private firm operating an orbiter.

There have been numerous studies done on the potential economic impact of a space station, most likely to be developed by private industry, permanently assigned to the space station.

Using an OTV would eliminate some of the weight and size restrictions now facing satellite manufacturers with the shuttle. General Dynamics, which is designing an OTV, has completed studies showing that an OTV system linked to a space station could save the satellite industry (assuming about two dozen satellite launches a year) from \$600 million to \$1 billion a year in launch and construction costs. Some construction costs would be reduced further with an orbital maneuvering vehicle, the space station's version of a repair station, which would permit regular maintenance and repair of satellites.

Looking at the potential for private investment in a space station module, the fee-for-service laboratory has been attracting the most interest thus far. Yet to be overcome is the preference among high-risk investors for relatively early return, five to seven years, on investment, while a space station is not scheduled to be operating until 1992.

In other space investments, one of the ways the long lead time on return on investment has been overcome, is to give investors a generous provision to stock ownership once the company goes public.

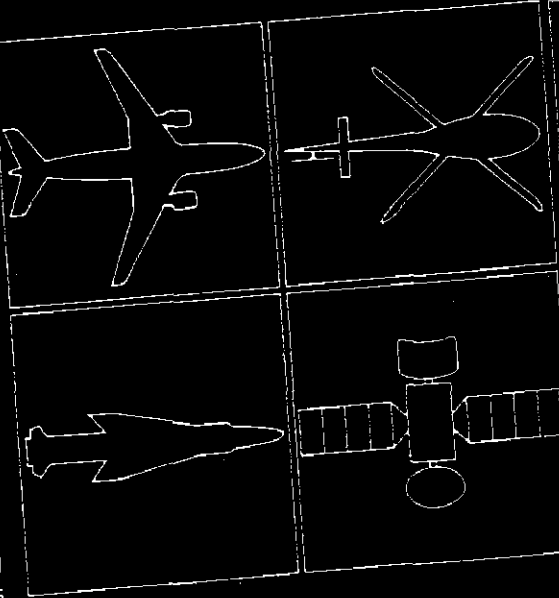
Any international participation in the U.S. space station will be on top of the estimated \$8-billion NASA effort. NASA is dealing strictly with government, which may choose to contract work to private companies, NASA officials noted.

Europe is talking about spending some \$2 billion, most likely for a Spacelab-type laboratory module. Japan is talking in the neighborhood of \$1-\$1.5 billion. Canada, which developed the remote manipulating arm for the shuttle, has yet to put a price tag on its possible participation.

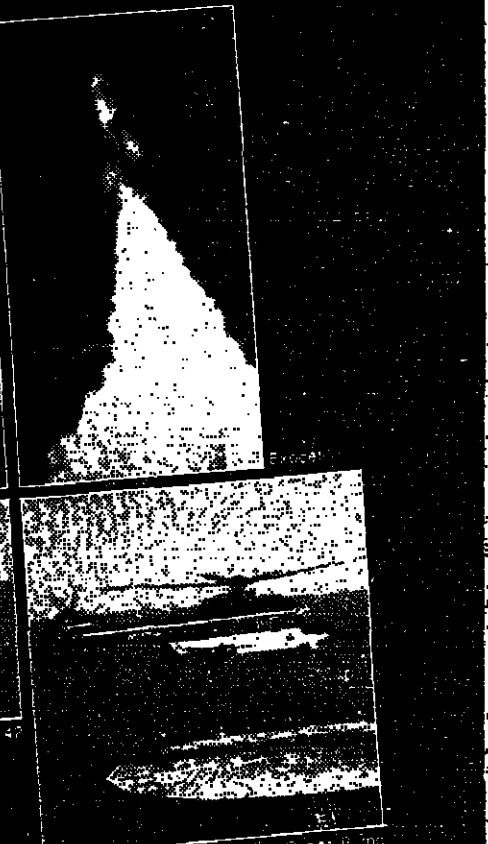
Another international workshop aimed at trying to resolve international participation in the station and access to its parts will probably be held shortly after NASA issues its request for proposals on the design and definition contracts, according to agency officials in Washington.

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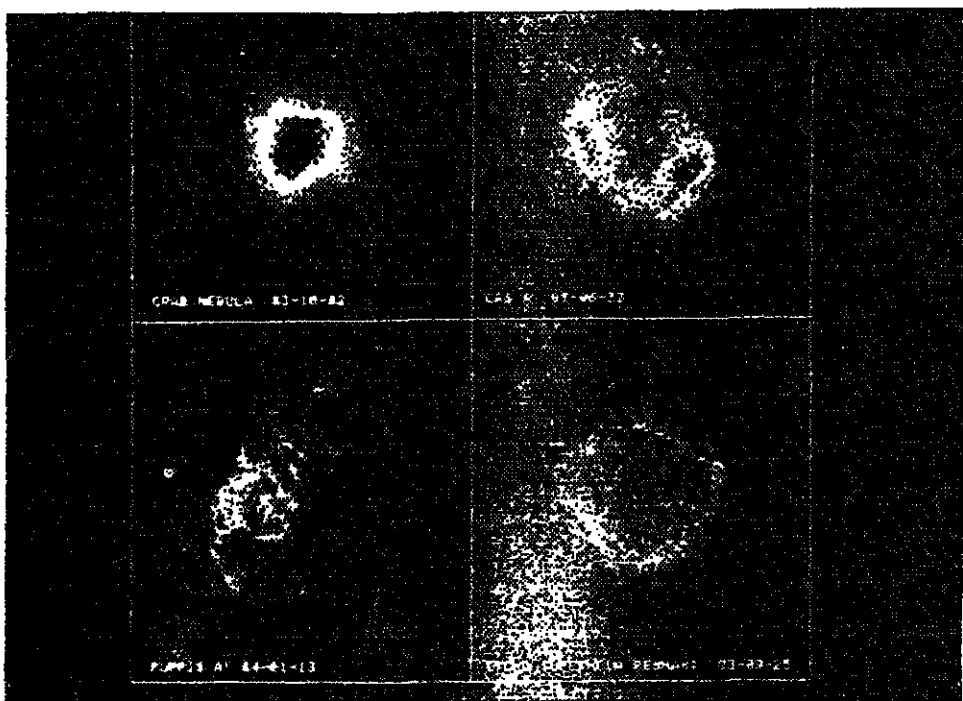


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X-ray emissions of four bright supernova remnants observed with telescopes of EXSAT.

New Soviet Military Aviation On Display at Farnborough

(Continued From Page 7)

solution and will not alleviate my immediate concern."

Although much of it is cloaked in secrecy, he apparently is also concerned about performance of the American command and control system during the Grenada invasion last October. Admiral McDonald, who was responsible for the military end of the operation, ordered a review of the difficulties, some of which were overcome by a combination of luck and pluck. In one case, when a group of American soldiers was under heavy Cu-

ben fire and it was impossible for them to communicate with circling AC-130 gunship planes, by standard means, one of the men found a telephone, used his credit card to call Fort Bragg in North Carolina, and asked for help. The request was relayed by satellite to a gunship and the Cuban fire was silenced.

In Lebanon, where American forces have also been deployed, the downing of a U.S. Navy A-6E medium bomber — and the subsequent death of the pilot and temporary imprisonment of the bombardier navigator — raised a

number of questions, some of which relate to a plan to upgrade the aircraft. Critics say the plane is too outdated to be improved much but the Navy disagrees and last month started the program in earnest with Grumman Aerospace.

Grumman is simultaneously beginning an effort to improve its F-14 fleet air defense fighter. Among other things, the F-14 will receive new engines — a pair of General Electric F110s will replace its present Pratt & Whitney TF30s.

The Navy is following the U.S. Air Force's lead on the F110. The

The Spaceman in the Gray Flannel Suit

(Continued From Previous Page)

research requirements than to support commercial processes."

At another conference this year, Richard Hensley, president of Aetna Diversified Technologies, a subsidiary of the insurance company, said there were no economic incentives for investment in commercial space activities beyond free shuttle rides. Other panelists at the conference warned that the risks of space ventures required substantial insurance, which is not currently available.

The skepticism of some Americans is matched by the apparent indifference of many Europeans; European industry simply has not stepped up to meet the challenge of commercializing space as have the Americans.

Ian Pryke, the European Space Agency official who is assigned to Washington to keep an eye on American space developments, said that because of the international teamwork that is the basis of European space activities, it will be much harder for Europe to support a commercial venture that might benefit only one company or country.

The Japanese also are lagging in the commercial development of space, although four Japanese industrial consortiums have started preliminary planning to make commercial use of the proposed American space station, should the United States agree to such international participation.

In the space transportation area, the administration has so far refused to turn over the shuttle program to private control (although it is still pondering whether to do so later). And in materials processing, the McDonnell Doug-

las venture with Johnson and Johnson is an exception rather than the rule. While a handful of other companies are considering investing in space-based materials processing activities, most corporations are wary about investing in space activities.

The potential value of the commercial space business is disputed by the experts. One forecast, done by Rockwell International, the prime contractor for the space shuttle, says the space manufacturing market alone may generate \$30 billion in revenues in the 1990s.

If the future prospects for space manufacturing can be gauged by the number of press releases issued by various companies, space would seem likely to become a busy place. Fairchild Industries and RCA Corp. have both announced concepts for orbiting platforms, which could be adapted to become factories for the manufacture of specialized materials for use in drugs and semi-conductors.

Max Faget, a former spacecraft designer for the National Aeronautics and Space Administration, has designed a shuttle-tended spacecraft, which he calls the Space Industrial Facility. It would have a life-support system so astronauts could work for short periods of time inside the module without the need to wear cumbersome spacesuits.

The European Space Agency also is building a space platform called Eureka (European Retrieval Carrier). Although Eureka was not developed with private financing, it could one day be turned over to a private organization.

Many of the most fascinating proposals for commercial space ventures have come from star-struck visionaries.

Some of their projects — to "capture" and "mine" asteroids — sound fantastic. Others are more prosaic, but still challenging. A host of small American companies is trying to break into the satellite-launching market.

But as the work by McDonnell Douglas illustrates, it is more likely that space will be commercialized by the same companies that have gained experience in space by working under government contracts.

While the task of commercializing space seems daunting, its prospects are advanced by the high level of sponsorship. President Ronald Reagan is the first president since John F. Kennedy to take a personal interest in NASA's affairs. He has directed NASA to build a manned space station within a decade and endorsed a national commercial space policy that directs government agencies to eliminate regulatory and legal barriers that are hindering space investment.

President Reagan has spread responsibility for space enterprise among three government agencies. NASA will continue to hold a leadership role, but responsibility for assisting the development of commercial satellite launching has been given to the Department of Transportation and a similar role for commercial remote sensing has been assigned to the Department of Commerce.

Although, as one NASA official put it, "there's plenty [of work] to go around," the agencies are not always in agreement. NASA is already feuding with the Department of Transportation, which has begun advocating the cause of private satellite launching with a vigor that has annoyed the shuttle program managers at NASA.

U.S. Air Force chose to buy more of them than Pratt & Whitney's improved F100 engine in the first

several years of a competition to supply new powerplants for the Air Force's F-15 and F-16 fighters. Israel and Turkey have also chosen the General Electric engine for their F-16s.

Early models of the U.S. Air Force's F-16s, meanwhile, have radar warning receivers — devices that tell the pilot he has been detected by enemy radar — that are inadequate, making them vulner-

able to attack by radar-guided missiles. The Air Force has said corrective action must begin soon, and that the total program will cost about \$23 million.

Improved self protection is also behind an Air Force drive to put an "advanced defense system," which it does not further describe, on the Lockheed TR-1 reconnaissance plane. The TR-1, similar to the U-2 that was shot down over the Soviet Union in 1960, is the airborne portion of a system to locate ground-based Warsaw Pact and Soviet

antiaircraft radars. One command center is in Germany and another is in Britain. Their locations are classified. "Classified" is the word for the U.S. Air Force's Advanced Technology Bomber (ATB), which will use new techniques to make it "stealthy" — hard for enemy radar to see. Almost nothing is known

about the ATB project outside close-knit government and industry circles, except that it is progressing well.

Closer to reality is Rockwell International's B-1B bomber, the first of which is slated to make its public debut in California on September 4. Production of the B-1, an earlier version of which was displayed at the last Farnborough show, is to be followed by that of the ATB, but precisely how the transition will be made is not clear.

Lack of clarity is also characteristic of Western cooperation with China on some military programs. It is certain, however, that China has tapped the technology of the Soviet Union's MiG-23 fighter for

a fighter of its own that it has been trying to perfect since the mid-1970s. The West could become involved in the program — the plane called the F-8, could fly with engines based on British technology, and help from the U.S. on avionics is possible. American officials stress, however, that any U.S. role would be minor.

There will be no U.S. role at all in Europe's new fighter program. The plane will be strictly European if current plans are followed. American attempts to become involved have been rebuffed by the participants, which include Britain, France, Germany and Italy.

France and Germany, meanwhile, are pressing ahead on a joint military helicopter program that will include development of two antitank types and one intended to shoot down other helicopters. The three will feature a common airframe and powerplant but use different weapons and sensors.

A generally similar family of small helicopters is to be developed under the U.S. Army's LHX program, and airframe and engine companies are lining up for an effort that could produce thousands of aircraft.

A new Soviet helicopter of a similar type is also said to be under development. It apparently would complement another Russian helicopter known in the West by the NATO code name "Havoc."

Propfan Engine Development Aims at Cutting Fuel Costs

By Robert A. Searles

NEW YORK — While the world's engine manufacturers form rival consortiums to produce new turbofan powerplants for the long-awaited, next-generation 150-passenger airliner, a number of U.S. companies (under contracts awarded by the National Aeronautics and Space Administration) continue to develop the Propfan — a novel propulsion system that could offer fuel savings of up to 30 percent over equivalent-technology turbofans designed for short-to-medium-range jetliners.

The turbine-powered Propfan, while similar to traditional propellers, features eight to 10 blades, delicately curved and set close together in an overlapping pattern. The blades are wider, thinner and swept back more than those of current-generation props in an effort to increase their efficiency and minimize noise.

Work on the Propfan began in 1975 after NASA was directed by the U.S. Congress to seek industry help in defining technologies for creating fuel-efficient aircraft. As a result, NASA established the Aircraft Energy Efficiency Program, and the Propfan concept was one of the most promising of the six candidate technologies to emerge from that effort.

Much research (both inside and outside NASA) has been directed

at improving the efficiency of DC-9, 727 and 737 class aircraft in particular since more than half of the aviation fuel consumed in commercial operations is burned on flights of less than 1,000 miles (1,600 kilometers). For example, in the United States, most available seat miles are on aircraft that have less than 150 seats and travel under 1,700 miles.

Most of the short-to-medium-haul commercial transports in service today were designed before the triple-digit increases in fuel prices of the 1970s. Although fuel costs seem to have leveled off, the price of fuel still accounts for more than 50 percent of the direct operating costs associated with flying an airliner. Consequently, most of the short-to-medium-range airliners in service today are expected to be retired by the year 2000.

Some experts estimate that if the new 80-to-150-passenger airliners scheduled to be available by 1980 could use the Propfan instead of conventional turbofan powerplants, the estimated fuel savings could total 6 billion gallons (22.8 billion liters) by the year 2000 and could be as much as 20 billion over the life of the new airplanes.

Military, commuter and private aircraft operators also could realize fuel savings because smaller versions of the Propfan are expected to be developed for tactical military

aircraft, maritime patrol planes, regional airliners and business aircraft. In fact, the Propfan currently being constructed by the Hamilton Standard division of United Technologies is a 9-foot-diameter, eight-blade model. (NASA officials estimate that a 12-to-14-foot Propfan would be required to power 150-passenger aircraft.)

Hamilton Standard's Propfan is being developed under a \$21-million NASA contract known as the LAP (Large-scale Advanced Propfan) program. The company is fabricating Propfan blades and other hardware for flight test. The blades themselves will be produced using the "spar-shell" technique that Hamilton Standard has utilized in manufacturing its new generation of commuter props.

Flight tests of Hamilton Standard's Propfan will be conducted by Lockheed-Georgia, which has been awarded a \$59-million NASA contract to conduct the so-called Propfan Test Assessment (PTA). Gulfstream Aerospace is providing a Gulfstream II business jet (which will be modified by Lockheed to serve as a test bed), and Detroit Diesel Allison is supplying a gearbox and a large turboshaft engine (a Model 501-M78 rated at approximately 8,000 pounds-thrust). Rohr Industries is providing nacelles.

Flight testing of the 9-foot Propfan, which is to be wing-mounted

Farnborough Exhibition Reflects Worldwide Recovery

By David Almy

NEW YORK — Farnborough's 1984 exhibition convenes with a majority of the world's military suppliers in a near-boom condition and with many commercial aviation manufacturers on the verge of or well into a significant recovery.

Driving both sectors are recent and rapidly evolving electronic, aerodynamic, material and aircraft design technologies as well as strong military procurement budgets and an improving worldwide airline profit picture.

Of these factors, perhaps the most significant is electronic. The changes taking place in aircraft control systems, navigation and pilot-aircraft interface have been brought about by an ongoing revolution in computerized command and control electronics, the results of which are now beginning to appear in civilian aircraft and which are currently the rule rather than the exception in military machines.

Airbus's new A320 commercial airliner, for instance, will employ a sidestick controller (like those used in modern fighters — no more control wheels popping up between the pilot's knees) linked to computers that will authorize movement of the aircraft's control surfaces. As a result, it will be the computers that will actually fly the airplane, based on the pilot's input. This "fly-by-wire" control system, adding computers to the loop of what has traditionally been direct pilot-aircraft control, has been de rigueur in many military aircraft since the mid-1970s. The

A320, however, will be its first major use in the civilian market.

In addition to control systems, advances in electronics are improving navigation technologies. In the very near future, many of the world's aircraft will navigate utilizing Rockwell International's new Navstar satellite system. Able to pinpoint an aircraft to within several meters on three axes on or above the planet, Navstar will allow future navigation to be so accurate that much of the existing navigation equipment will seem obsolete.

Another major trend is toward unconventional aircraft configurations built with composite — "superplastics," graphite epoxies, etc. — materials. Besides their lighter weight vis-a-vis aluminum, composites are stronger and allow aircraft designers more flexibility in designing aerodynamic contours. The Lear Fan 2100, Beech Starship I and Avtek 400 are a few of the aircraft that are being built almost entirely of composite materials.

The military has not ignored the potential for such materials. Now entering service with the U.S. Marines and on order with the U.S. Royal Air Force and Spain's air force, the McDonnell Douglas-British Aerospace AV-38B Harrier II flies with a wing made of composites. There have also been rumblings that the "stealth" bomber under development in the United States will be made in large part of composites to help reduce its radar signature.

Bringing all these technologies into play in the very near future will be Grumman, which on August 27 in Bethpage, New York, rolled out their experimental X-29 research

aircraft. Funded through contracts awarded by the U.S. Air Force, the National Aeronautics and Space Administration and the Defense Advanced Research Projects Agency, the X-29 will incorporate many of the advanced technologies that may constitute much of the fighter aircraft of the future.

The X-29 utilizes a reversed main wing that sweeps forward and small canards in the forward part of the fuselage that angle backward. Three on-board digital computers will augment the pilot's control inputs with thousands of its own every minute, enabling the aircraft to fly. The new aircraft will be lighter than current-generation fighters through the use of composites, and Grumman hopes that its unusual configuration will enable the X-29 to be more maneuverable at high speeds critical to aerial combat. Grumman expects to fly the X-29 at Edwards Air Force base in California late this year.

The European consortium Airbus officially launched the Airbus A320 in an effort to capture the 150-seat, single-aisle market currently served by Boeing's 737 and 727 and McDonnell Douglas's DC-9 and MD-80s.

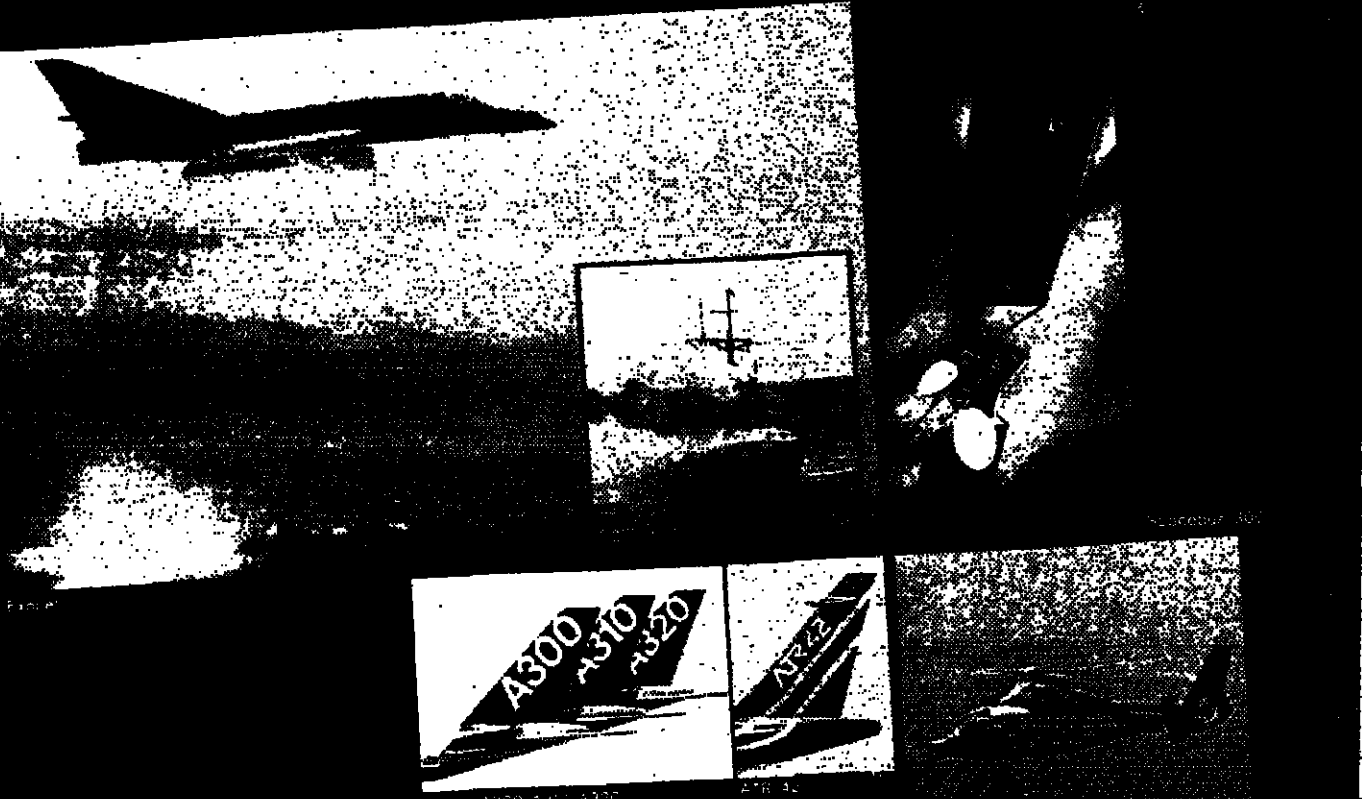
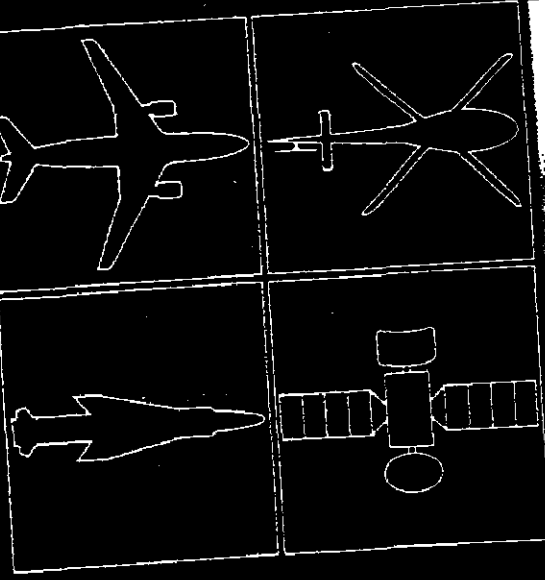
Boeing had previously indicated that if Airbus proceeded with the A320, it too would enter the 150-seater airliner market with an all-new design, but has yet to announce its entrant. In fact, Boeing does not believe that a substantial market for the A320 exists and cites as proof what the

(Continued on Page 12)

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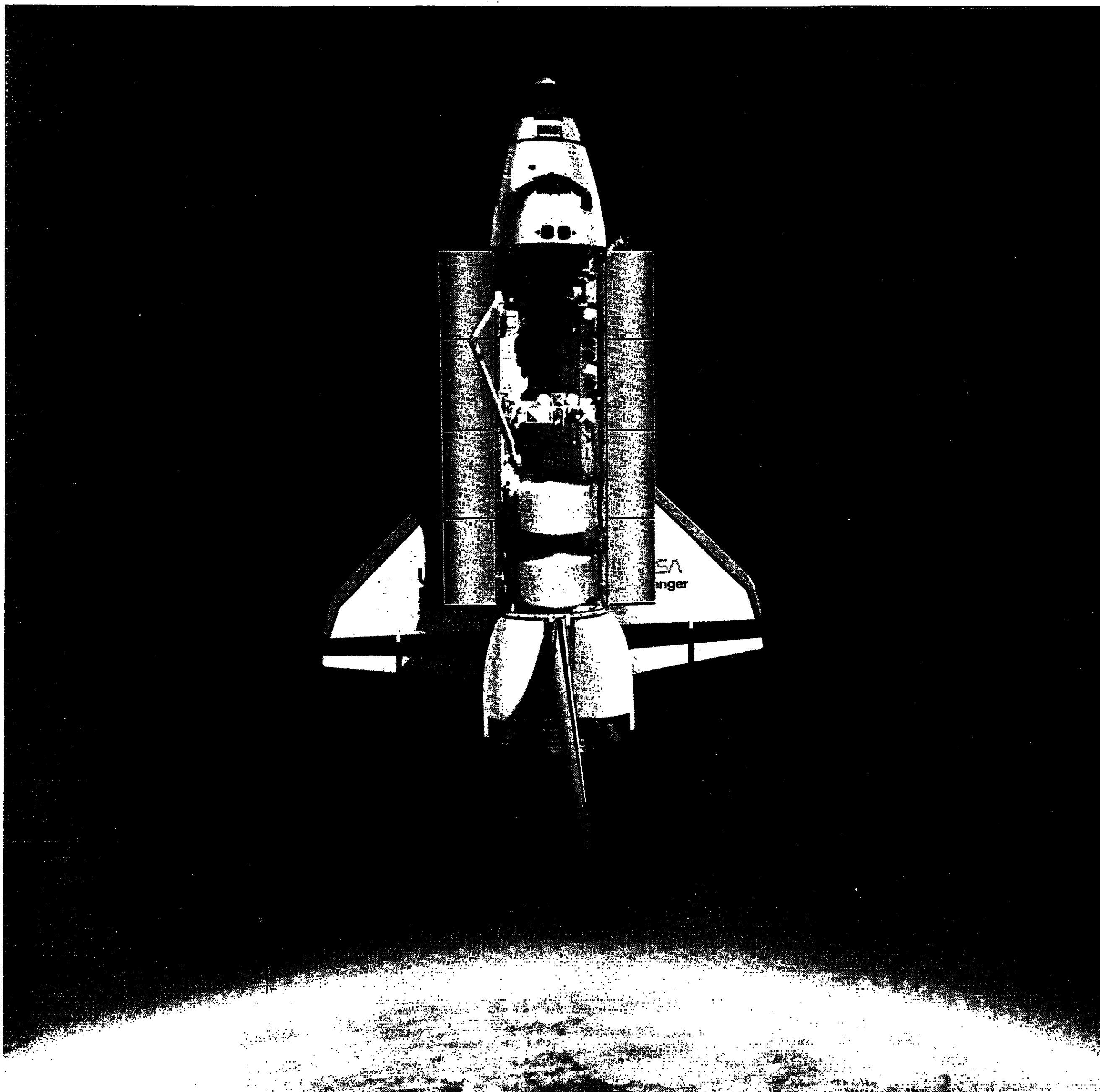


Photo of the Rockwell International-built Space Shuttle in orbit, taken from the West German SPAS satellite.

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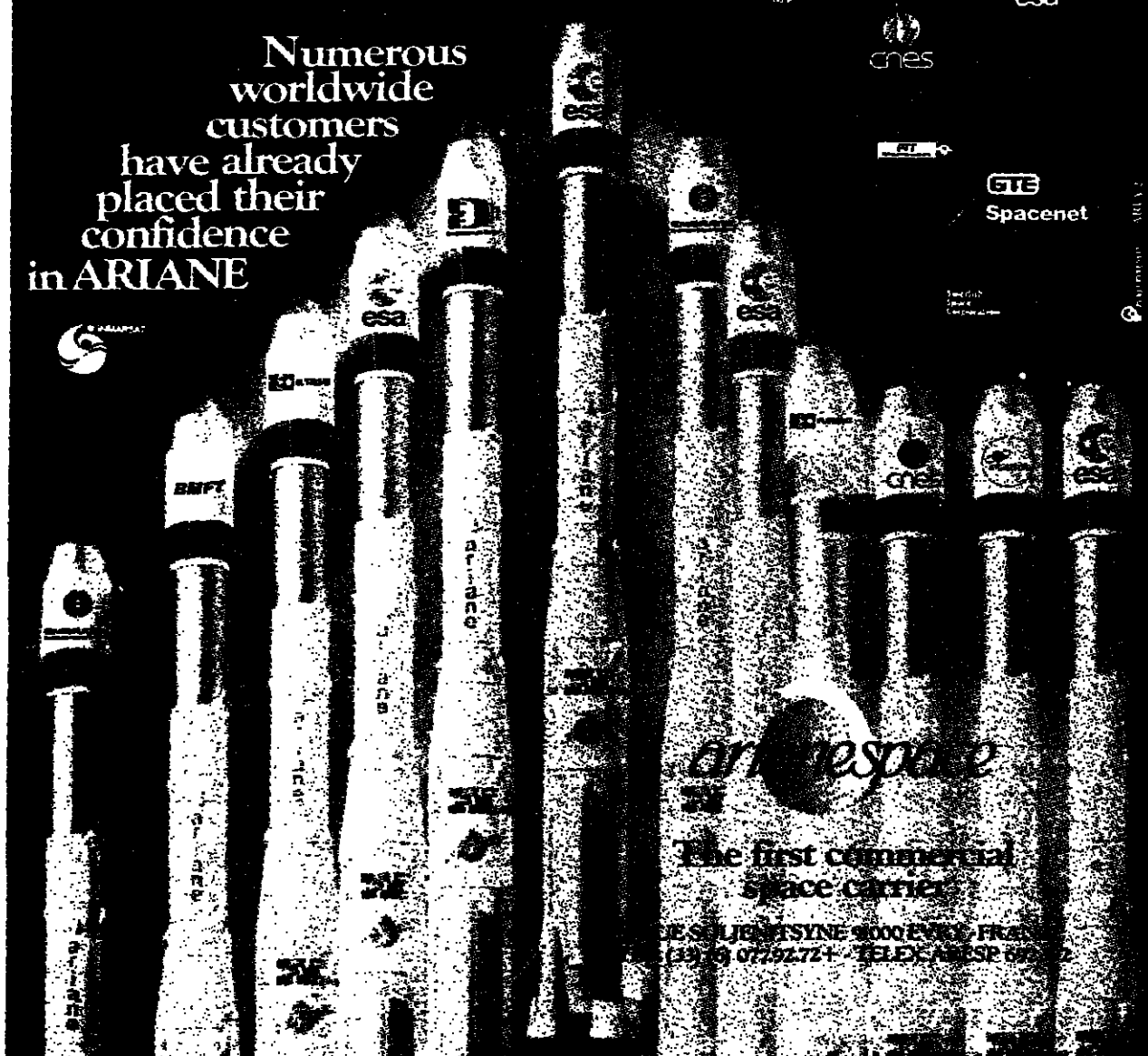
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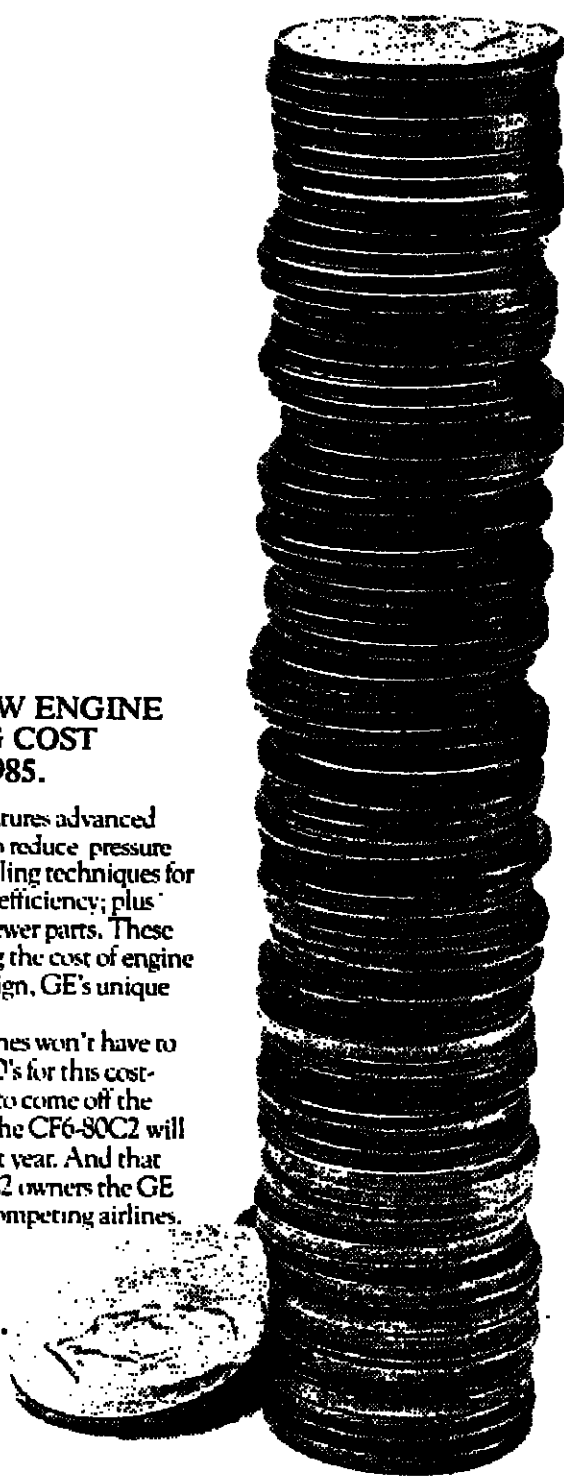
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A SPECIAL REPORT ON AEROSPACE

Technological Revolution in Cockpits

By Paul Kinnucan

BOSTON — A revolution is taking place in the aircraft cockpit. For decades, pilots have been assisted by simple electromechanical and electronic cockpit systems (avionics) based on analog circuitry. Now, these systems are being replaced by a new generation of systems based on digital integrated circuits.

Such systems differ from conventional avionics in several significant ways. First, they represent information as binary numbers instead of by voltages proportional to a signal value. Secondly, they display the information on cathode ray tubes (CRTs) instead of electromechanical gauges. Indeed, the CRT has come to symbolize the ultimate in cockpit automation, and its prevalence in the latest aircraft has given rise to the term "glass cockpit." Thirdly, digital systems are interconnected by information highways called buses instead of by point-to-point wiring systems, thus facilitating sharing of information among the systems.

Digital cockpit systems have many advantages. Because they use powerful digital processors and can share information, they can automate tasks that are difficult or impossible with analog systems. Also, because they use microprocessors and other integrated circuits they are more compact and reliable than analog systems, and they consume less power. Digital systems are easier to upgrade than the old analog systems. New features can be added to an aircraft's existing systems simply by reprogramming their computers, and new subsystems can be added by plugging them into the aircraft's data bus.

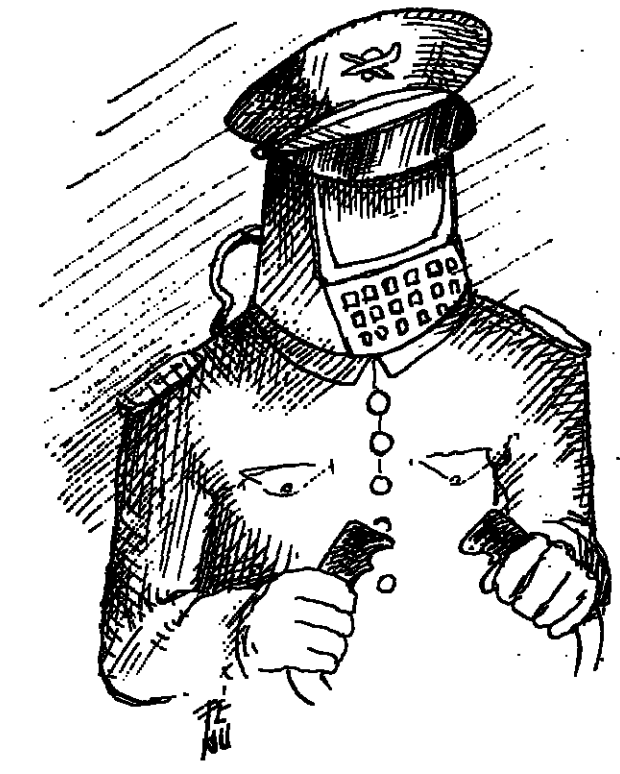
Because of their advantages, digital systems are rapidly replacing analog systems in aircraft. First introduced on military aircraft in the

late 1970s, they are now becoming commonplace on civilian aircraft as well. For example, the latest generation of airliners represented by the Boeing 767 and the Airbus 310 incorporate all-digital avionics systems. Many airlines are retrofitting older aircraft with digital systems. Digital avionics are also being offered as standard features on the latest corporate and general-aviation aircraft.

The Boeing 767 widebody transport introduced into service two years ago illustrates the highpoint in digital avionics. The 767's digital avionics include an electronic flight instrument system (EFIS), an electronic instrument and crew alerting system (EICAS), an autopilot, an autothrottle and an all-electronic inertial navigation system (INS) based on laser gyro.

These systems display information on six-color CRT screens located on the aircraft console. Keypads and lighted pushbutton switches are used to enter information into the avionics systems. Typically, indicator lights are displayed only when an action is required. The cockpit is dark except when all settings are correct.

Developed by the Collins division of Rockwell International Corp., the Boeing 767's EFIS replaces a myriad of electromechanical instruments used on conventional aircraft. It collects flight, navigation and weather information from aircraft sensors and displays it on two CRT screens located on the pilot's console. (The system also displays the same information on a pair of CRTs located on the co-pilot's console.) Typically, the outboard of the two displays shows flight information (aircraft orientation, speed and altitude) while the inboard display shows navigation information (aircraft location and bearing, projected



flight path, bearing of radio beacons, weather radar returns).

The CRT displays generated by the EFIS mimic many of the electromechanical gauges and dials used on previous aircraft while adding information. For example, the system's electronic flight instrument displays graphically reproduce the artificial horizon of the electromechanical attitude director indicator (ADI) and the compass rose found on the horizontal situation indicator (HSI) used on earlier aircraft. The electronic HSI not only shows the typical compass rose but can also superimpose the aircraft's intended route, a weather

radar display, or a topographical map synchronized to move with the aircraft.

The Boeing 757's EICAS, also developed by Collins, is essentially an electronic flight engineer. It continuously monitors the status of aircraft systems, notifying the pilot of exceptional conditions by displaying messages and gauges on two CRT screens located in the center console between the pilots. The system automatically selects information to be displayed. Only information essential for a particular stage of a flight is shown.

The 767's flight management (Continued on Next Page)

Metals Respond to Plastics Challenge

By George C. Larson

NEW YORK — Fiber-reinforced composites created considerable excitement within the aerospace industry because of the advantageous properties these revolutionary new materials offer. Since their introduction, the use of composites, while continuing to grow at a very rapid rate, has become more focused as their role in aerospace structures has become better understood.

Meanwhile, the metals industry, at least partly in response to the invasion of the fiber-reinforced plastics into its traditional domain, has responded with some exciting advances of its own, and within the last year, metals have recorded something of a comeback.

Fiber-reinforced composites consist of high-tensile-strength fiber materials impregnated with a plastic that hardens to form a finished component. The combination of the two is stronger than each individual material taken alone. The fiber component is made available in many forms, including unidirectional tape, which can be wound around a form, or as a woven cloth.

Composites offer high strength with low density and are resistant to corrosion and fatigue. They appeal to the designer who needs to "tailor" a structural component to unusual load pathways. Composites also resist failure due to isolated ballistic damage because of their innate redundant load pathways.

But composites cost more than traditional aluminum alloy for the equivalent structure. They can require a substantial investment in

fabrication processing equipment such as large autoclaves and computer-controlled winding machines that provide the quality assurance necessary in aerospace products.

Composites are, therefore, growing fastest in military applications. Where performance comes first, composites win. Weight reduction and battle-damage resistance ensure these materials a place on fighters and attack aircraft. Perhaps, their most dramatic gains have been made in the combat helicopter, where the payoffs are even greater. It now appears that military helicopters will be the first production aerospace vehicles with extensive composite primary (load-bearing) structure.

The U.S. Army's Advanced Composite Aircraft Program (ACAP) is currently taking shape in prototypes from Sikorsky (S-75) and Bell Helicopter Textron (D292), and the light rotorcraft (LHC) vehicle will almost surely rely heavily on the same technology. In the latter program, as much as 450 kilograms (990 pounds) in structure weight may be saved. Use of advanced composites in the future tilt-rotor JTVX will increase that aircraft's payload. (Acquiring composite know-how has already paid off in other ways for Sikorsky, which has been marketing its fabrication capacity to other aircraft manufacturers.) Military services expect durable composites to yield helicopters with lower life-cycle costs.

Advanced fighter concept designs are hastening the invasion of composites into the ranks of fighter and attack aircraft. Newest versions of the Harrier "jump jet" use composites in their wings to reduce

airframe weight and correspondingly increase weapons load and combat radius. Next-generation fighter designs as envisioned in the radical Grumman developmental model incorporating forward-swept wings would apply composites in new ways to tailor the way the wing responds to bending loads. Prior to the introduction of advanced composites, a forward swept-wing form was considered impractical.

McDonnell Douglas recently reported reductions in production times for its AV-8B (improved Harrier), F-15 and F-18 models due to introduction of composite structures. The firm will almost triple its current consumption of carbon fiber materials within the next three to four years. With \$70 million already invested in the technology, McDonnell Douglas may invest another \$30 million during that period.

While forecasts for the overall composite content of military aircraft see a threefold to fourfold increase over the current range of 10 to 20 percent content, the rate of increase will be more moderate. The all-composite Lear Fan experienced some setbacks that may be causing other manufacturers to pause. Former employees of Lear Fan say that had the airplane been built of metal, it would actually be lighter than it has turned out to be. And Beech Aircraft, which had announced an ambitious delivery schedule for its composite-and-titanium Starship business airplane, recently announced delays. Still, Beech's president, Linden Blue, describes the Starship as "on track."

Builders of large transport aircraft profess no surprise at some of

the difficulties encountered in smaller commercial programs. Boeing's 757 and 767 aircraft — the newest generation — make use of composites selectively, and they use none at all in primary structure. For those two models, Boeing officials say they expect "not much change over the next term; the airplanes are in production, which makes any changes unlikely." According to Boeing experts, transport aircraft are built to criteria of cost-effectiveness rather than the military criteria of performance above all. The higher cost associated with composite materials, therefore, acts to counter any rapid growth.

What has caught the airlines' eye is a promising new alloy that combines aluminum and lithium. Lithium is the lightest metal element known. Introduced in the early 1960s, the alloy had early problems providing sufficient "toughness" for aerospace applications, but Alcoa, which is currently developing the first two of a family of four aluminum-lithium alloys that form a family known as Alclad, said those problems have largely been resolved.

The first samples of the new material were being readied for evaluation by both military and civil aerospace manufacturers, with tests expected in early 1985. The aluminum-lithium material is expected to offer equivalent strength with 7 to 9 percent lower density and with an added bonus: increased stiffness — one of the composites' greatest selling points. Alcoa is spending between \$14 million and \$19 million in research on aerospace products in 1984.

Farnborough Exhibition Reflects Recovery

(Continued From Page 10)

company believes to be the A320's thin and largely hometown order book (of the 51 A320s currently on order, more than two-thirds are to French carriers).

For its part, Boeing will be flying its newest airplane — the 737-300 — at Farnborough. With a passenger load of 128, the 737-300 is a stretched version of the 737-200, which utilizes GE-SNECMA CFM56-3 engines and is due to enter service in the United States in November with U.S. Air.

Boeing expects an "improving" sales picture for 1984, with sales of about \$10 billion projected. In late August, the company announced the sale of 10 747-300s (the stretched upper-deck version of the 747) to Saudia Airlines. Powered by Rolls-Royce RB211 engines, the contract for the 10 jumbo jets will account for \$1 billion on Boeing's sales ledger.

Saudia had previously ordered 11 Airbus A300-600s in late 1982, of which they have taken delivery of eight so far. Airbus is also experiencing an improving sales situation having delivered well over 260 airliners by mid-year and holding a backlog of nearly 140 additional orders. Although 1983 was a decidedly rough year for Airbus (only six aircraft were sold), the company is unsparingly bullish on the future of the commercial-airliner business, believing that a market exists for 3,400 150-seat, single-aisle aircraft alone over the next two decades.

Airbus's first two airliners, the A300 and A310, have met with significant success. With nearly 250 in service throughout the world, the current A300-600 (which typically seats 250) is the primary competi-

tor for Boeing's 767. In addition, over 100 A310s have been ordered, about a third of which have been delivered. Airbus hopes to exhibit both the A300-600 and A310 at Farnborough.

Led by a burgeoning U.S. military budget, many of the world's major military contractors are running at near capacity.

The year's Farnborough exhibition will be the site of Northrop's second public F-20 Tiger II flight demonstration. The advanced version of an aircraft derived from the F-5, the F-20 is one of America's export fighters. Through 1984, the company expects to have spent more than \$75 million in research and development on the F-20, but, as yet, no sales have resulted from that investment.

Despite a recalcitrant market for its F-20, Northrop's overall business is up substantially. The company is the primary subcontractor on the F/A-18 fighter-attack aircraft for the U.S. and Canadian military. In addition, Northrop is a major supplier of military electronics, unmanned drones and airborne targets and will be displaying these wares during the show.

Grumman Aerospace of Bethpage, New York, is a prime beneficiary of the increasing U.S. military budget. Because of a recent \$1.14-billion contract for redevelopment of the F-14 Tomcat and A6E Intruder aircraft, Grumman now believes that the production lines for those two aircraft will continue to operate into the next decade.

Rockwell International is riding high on the strength of its successful military and space shuttle business. Although a major setback in the development of the B-1 occurred August 29 when a prototype

B-1 crashed in a California desert while on a training mission, the first production B-1B bomber for the U.S. Air Force will be rolled out on September 4, with production of 100 of the strategic aircraft scheduled. The following day, the space shuttle Discovery was scheduled to complete its first flight with a landing at Edwards Air Force base in California — within sonic boom range of the B-1B's rollout. The fourth and final shuttle — Atlantis and Jetstream 31 executive aircraft — is still under construction.

McDonnell Douglas is also having a good year. The company reports a \$14-billion sales backlog, up substantially from last year. The St. Louis-based contractor is building four major combat aircraft, the F-15 Eagle, F/A-18 Hornet, the AV-8B Harrier II VTOL aircraft and the AH-64 Apache helicopter manufactured by McDonnell Douglas's recently acquired Hughes Aircraft division.

McDonnell Douglas' DC-10 is still in production to fill orders from the U.S. Air Force and Federal Express. The company claims that the MD-80 series — derivatives of the original DC-9 of the mid-1960s that currently seat between 135 to 170 and are existing competition for the new Airbus A320 — boasts over 125 firm orders as of mid-year with 145 conditional orders and options. McDonnell Douglas will have a military version of the Hughes 530MD helicopter on display at Farnborough.

Lockheed is running at high capacity having begun work on 50 C-5B Galaxies that have been ordered by the U.S. Air Force. The C-130 Hercules production continues, with 57 countries now flying the ubiquitous four-engine turboprop that began production three

decades ago. The company's F3-C Orion ASW aircraft continues its production for delivery to several of the world's navies, while a derivative of the U-2 spy plane, now called the TR-1 (TR stands for "tactical reconnaissance"), is in production for the U.S. Air Force.

Farnborough being home turf for British Aerospace, that company hopes to display at least one of every aircraft currently in production, including the new 125-800 and Jetstream 31 executive aircraft. The 146 four-engine commuter and the new Super 740 commuter, in addition, BAe will exhibit the Harrier fighter, Hawk trainer and Nimrod early warning and reconnaissance aircraft.

The international trade war for dominance within the 30- to 50-passenger commuter market continues to intensify. Saab-Fairchild, a U.S.-Swedish joint venture, is the first to place a next-generation commuter airliner in service. First with Crossair of Switzerland in June and later last month with Comair of the United States, the SF-340 is also the first aircraft to be certified jointly under Europe's new Joint Airworthiness Regulations (JARs).

Hot on the SF-340's heels, the Aerospaziale-Aeritalia ATR-42 made a successful first flight in France on August 16. A French-Italian joint venture, the ATR-42s powered by Canadian turboprop engines. Aerospaziale will also have several of the company's turboprop aircraft on static display, including the Trinidad TB20, Tobago TB40, Robin R3120 and others.

DeHavilland will ferry all four of its aircraft to Farnborough. CASA of Spain is expected to present its CASA/Nurture CN235 commuter transport at (Continued on Next Page)

Ultralight Recreational Flying Now Faces Stricter Regulation

By Thomas A. Horne

FREDERICK, Maryland — Ultralight aviation, once heavily advertised as the most promising form of low-cost recreational flying, has recently come up against some hard realities. Regulatory agencies in several nations are rethinking their policies toward ultralights, and in many cases have decided in favor of stricter controls.

In the United States, for example, the Federal Aviation Administration this month was to convene a series of hearings designed to find out if its current, minimal policy toward ultralights is adequate to assure the public's safety. The Swiss government has banned ultralight flying, declaring their noise a threat to the environment. Austria would like to do the same. West German ultralight pilots will have to face new noise regulations in 1985. These will limit ultralights to 55 decibels, measured as the aircraft flies 500 feet overhead at full power.

Other governments are less restrictive. Britain delegates ultralight (microlight, in British parlance) pilot and aircraft certification responsibilities to the British Microlight Aircraft Association. Canada has incorporated ultralight rules and standards into regulations covering the rest of general aviation.

Ultralight sales have tumbled drastically. Piper Aircraft of Tonawanda, California, the world's largest manufacturer of ultralights,

sold some 250 aircraft a month in 1981. This year, the company reports an average of 30. Other manufacturers said they are in the same situation.

This scenario would never have been predicted in 1979, the year that ultralight manufacturing began in earnest. In the early days the sport attracted thousands with the promise of personal flying unencumbered by high-cost, mandatory flight training or complicated flight rules. By 1983, estimates put total ultralight sales at approximately 20,000 aircraft.

Ultralights are distinguished by their diversity. Early (pre-1982) models are the crudest. These are likely to be weight-shift machines, controlled by the pilot's body movements, or two-axis-control designs with elevators and rudders only. Some designs mixed weight-shift and two-axis control systems.

Early ultralight engines left a lot to be desired. Unreliable and inefficient, they were intended for use as earth-tampers and lawn mowers.

The most nightmare of the early designs were those that used chain-saw engines bolted to a hand glider's down tubes. These came with primitive shields to keep the pilot's head and hands from the propeller.

Today's ultralights are quite an improvement, although critics have held on to their prejudice. Instead of cobbled-up control systems and faint-hearted engines, a modern ultralight usually has a conventional control system with elevators, ailerons and rudders (and in some

cases, flaps) and a high-quality engine. Some, such as American Aircraft's Falcon, have airframes of high-strength Kevlar and carbon fiber and come equipped with built-in ballistically deployed parachutes. The most popular engines are those manufactured by Japan's Kawasaki, the United States' Cuyuna Engine Company and Bombardier-Rotax of Genskirchen, Austria.

Pilot education and airframe quality has improved, too. The United States' Aircraft Owners and Pilots Association's Air Safety Foundation (ASF) has an FAA-approved ultralight instructor and pilot safety program in place, as well as accident data and a means for registering ultralight aircraft. America's Powered Ultralight Manufacturers' Association (PUMA) has an FAA-approved program to certify ultralight airframes. All of this is a far cry from the late 1970s, when exuberance was in and responsibility was out.

For the American experiment in ultralight self-regulation, these encouraging developments may be a case of too little, too late. The ASF and PUMA programs are voluntary, and participation is low. Many pilots are still self-taught. Manufacturers would rather compete than subscribe to common goals. Some stretch the law by building aircraft that are too fast or too heavy (35 knots and an empty weight of 254 pounds are the American limits, set down in federal regulations).

Economic factors are also ganging



A hand-held view of fields outside Paris from an ultralight plane.

John Cohen-von Neitz

up. The cost of an ultralight can now reach \$8,000. Training, insurance, storage and repair costs add up quickly. The cost of operating an ultralight can rival that of a simple light plane such as the Piper Cub. Access to suitable flying sites is frequently denied ultralights. The cumulative effect has been to drive people away from ultralight flying.

The publicity surrounding ultralight accidents has not helped, either. Those nonstandard controls and cantankerous engines have contributed to numerous accidents, most of them occurring in the first few hours of the ultralight pilot's flying career.

The American National Transportation Safety Board has investigated 146 ultralight accidents (79

of them fatal) since February 1983. Most of them involved in-flight loss of control or structural failure, and most involved pilots without conventional pilot certificates. Data from the ASF supports the view that safety in ultralight training has a long way to go. One fourth of their 357 accident reports involved pilots with no more than one hour of total ultralight flying

time. Half of their reported accidents listed training as the purpose of the flight.

While not fulfilling the hopes it inspired in 1979, ultralight aviation has found a place in the larger scheme. In spite of their sometimes renegade behavior, ultralight pilots are being assimilated into the conventional pilot population.

Ultralights have also paved the way for a new type of low-cost two-seater — a notch or two above ultralights, but less complicated than current two-seat trainers. Avions Pierre Robin's Robin ATL (Avion Très Léger) and Grob's G112 — scheduled for sale next year — are good examples of this latest trend in light-plane design.

Advances Alter Pilots' Roles

(Continued From Previous Page)

system, developed by Sperry Flight Systems, serves as an electronic copilot. Based on a flight plan entered by the human pilot, it can fly the plane from take-off to cruise altitude, navigate the aircraft from waypoint to waypoint to intercept with the destination airport's instrument landing system beams, to touchdown and roll-out. In a flight planning mode the EFIS and the FMS work together, displaying the pilot's planned route and storm centers on the electronic HSI.

The new level of automation made possible by digital avionics pays off in lower operating costs. The Boeing 767 is designed to be operated by two pilots and, according to pilot reports, could easily be operated by a single pilot.

The 767's FMA can choose the most fuel-efficient climb and descent rates for the aircraft's weight and ambient conditions, and it takes into account trade-offs between fuel savings and crew costs. Tests conducted by airlines of the flight management systems incorporated into the 767 and other commercial transports have demonstrated fuel savings as high as 4 percent, compared to the performance of human pilots.

The automated systems of the 767 also reduce maintenance costs. For example, autothrottles are designed so as not to exceed operating temperature and pressure limits of the engine. Excesses tend to shorten the life of engine components, requiring more maintenance. The automatic systems gather and store more information about the aircraft's engines and hydraulic systems than can a human pilot. With this data, maintenance crews can pinpoint and replace worn components, rather than having to do a complete overhaul. Airlines are revising their maintenance procedures to take advantage of the sophisticated self-diagnostic capabilities of the latest generation of commercial transport aircraft.

Improvements to digital avionics systems are in the works. One improvement will be to use CRTs with bigger display screens. Display screens are fairly small — typically 5 by 6 inches — on current aircraft. New models will have larger screens. For example, the Gulfstream IV business jet being developed by Gulfstream Aerospace Corp. will have 8x8 inch screens. This will allow more information to be displayed on a screen or allow symbols and graphics to be larger, increasing legibility. By the next decade, observers expect aircraft to incorporate 13-inch displays. Designers of military cockpits envision multiple displays being replaced by a single wide-screen

display that would be used as an electronic canvas by all the aircraft's computers.

Aircraft manufacturers and avionics companies are searching for alternatives to the CRT, which can be difficult to read in bright light, and is bulky, heavy, expensive and consumes large amounts of power. Flat-panel display technologies appear most promising. Unfortunately, all of the current Flat-panel display technologies have drawbacks that make them unsuitable for aircraft use. But improvements are expected to overcome the limitations so that by the next decade they could begin to replace CRTs in aircraft.

Head-up displays are being considered for use in civilian aircraft. With these systems, information displayed on a CRT screen is projected to a transparent panel in front of the pilot's windshield, allowing the pilot to monitor critical information without having to stare down into the cockpit. Head-up displays have been used on military tactical aircraft since the early 1960s. Now, there is talk of incorporating them on other types of military aircraft and even on civilian transports, although there is considerable controversy whether they are needed on the latter.

Head-up displays for military aircraft are being steadily improved. The use of holographic projection systems is allowing the use of larger displays and increasing their brightness, thereby enabling more information to be displayed and also allowing images from radar, optical and infrared sensors to be displayed.

Besides looking at ways to improve visual feedback to pilots, systems manufacturers are looking at new ways to provide aural feedback — notably synthetic speech.

Improved means for enabling the pilot to convey information to the on-board systems are also being explored. The keyboard is currently the only means of communicating with the aircraft's computer, which requires time and that the pilot stare down at screens. Innovations that will ease entry of information are touch-sensitive transparent panels that fit over the display screen, enabling the pilot to select menu options displayed on the screen simply by pointing. Also, cockpits are beginning to incorporate tape decks that enable pilots to enter prerecorded data, such as standard flight plans.

Digital speech recognition systems are being explored as another way to enter information. The U.S. Air Force, Army, NASA and avionics systems manufacturers, such as Sperry, Collings and Bendix, are

all exploring the use of speech recognition systems in the cockpit. By the next decade, cockpit systems should be able to recognize simple spoken commands.

The problem with current speech recognition systems is that they recognize a command only about 80 percent of the time in the noisy environment of an aircraft cockpit and they have difficulty dealing with connected speech. In addition, they have to be trained to recognize individual speakers.

Future digital systems will also generate more sophisticated computer graphics to help the pilot visualize his or her situation at night or in the clouds. For example, three-dimensional "high in the sky" displays are being developed for commercial transports. In these displays, the aircraft's intended path is shown as a moving ribbon in three-dimensional space. It is similar to the moving road display on video arcade games.

Digital moving topographic map displays are another potential addition. Currently, moving map displays are based on microfilm strips that are projected onto a horizontal situation display. Future moving map displays would be based on digitized maps stored on magnetic or optical disks. The military sees great use for such maps. They could be readily updated in flight, enabling the pilot to mark the locations of enemy forces and defenses.

Topographic maps could be used to create three-dimensional synthetic images of the terrain over which an aircraft must fly, showing the actual appearance of the terrain as viewed from the plane's altitude and under various lighting conditions. The three-dimensional maps would show the lethal envelopes of surface-to-air missiles and anti-aircraft guns, enabling the pilot to steer a course that avoids them. The U.S. Air Force plans to test such a map on an advanced version of its F-16 fighter made by General Dynamics Corp. as part of its advanced fighter technology integration (AFTI) program. The system will be based on digital maps prepared by the U.S. defense mapping agency. Similar systems are being developed for civilian aircraft.

Advanced navigational equipment is likely to appear on both civilian and military aircraft in the coming decade. For example, new navigational systems based on the global position satellite system (GPS) will enable accurate position fixes to be made anywhere on the globe. In contrast, the current radio navigation systems used on aircraft use ground-based radio beacons that are concentrated primarily in the Northern Hemisphere.

The Signs of World Recovery at Exhibition

(Continued From Previous Page)

Farnborough as well. The GE-powered CN235 joins the CASA 212 in the worldwide commuter arena.

Embraer of Brazil will exhibit its new Brasília commuter airliner along with the Bandeirante commuter and the Tucano military trainer.

Short Brothers of Ireland will fly versions of its 330 and 360 commuter aircraft and may exhibit the Sherpa — a military cargo version of the 330 of which 18 have been ordered by the U.S. Air Force Europe.

Among the traditional "business" aviation manufacturers, business has not yet returned to past (and profitable) levels. While waiting for business to return to normalcy, several of the manufacturers have turned to new product devel-

opment, or the military, to spur company activity.

Gates Learjet will exhibit a heavily modified version of its 35A that will serve as a target-towing aircraft with wing stores capability. Gates is supplying 80 35As to the USAF for transport duty.

Jointly with Gates, Rinaldo Piaggio Spa of Italy is designing the Gates-Piaggio twin-engine turboprop. First announced in October 1983, the novel aircraft will incorporate a "three-lifting-surface" wing concept that the companies claim will make it one of the most efficient and fastest aircraft in its class. Piaggio was to exhibit a new cabin design at Farnborough developed for the aircraft by Gates. Beechcraft is heavily involved in development with a radically new composite aircraft of the canard configuration — the Starship I. Piper Aircraft, which was recent-

ly bought by Lear Siegler, will be ferrying its latest turboprop — the Cheyenne 400 LS — to Farnborough and will attempt to break the New York to London speed record along the way. A similar attempt will be made with Piper's Cheyenne IIIA.

Although the world's aviation evolution seems to be accelerating, the pace is about to increase still more. Computers are now being developed to completely generate and modify an aircraft's aerodynamic and structural efficiency along three dimensions. This innovation will allow new designs to be originated and honed in days instead of months, and finished aircraft will be completed in months instead of years. All that is certain is that much is yet to come, and that the face of aviation is bound to change substantially in the very near future.

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A SPECIAL REPORT ON AEROSPACE

Spanish Aerospace Industry Still Awaits Major International Sales Breakthrough

By Tom Burns

MADRID — For Construcciones Aeronáuticas S.A., known as CASA, the Spanish majority state-owned aerospace company, it has been a question of every silver lining having a dark cloud. The silver lining has been increased participation in international aerospace projects; the cloud has been the failure to achieve an international sales breakthrough where it matters most — in the United States.

Participation has come in the form of involvement in the project to develop the European Fighter Aircraft (EFA), in an increased stake in the European Airbus and in the prospect of working together with the helicopter giant Sikorsky.

The international sales failure was the result of the U.S. decision in February to award a key defense contract for light transport aircraft to Short Brothers of the United Kingdom, builders of the Shrike, in preference to CASA. High hopes had been held at CASA that the company's highly successful short take-off and landing (STOL) transport plane, the Aviocar C-212, would be chosen by the U.S. Air Force for its European Distribution System Aircraft (EDSA) program.

The EDSA program, which concerns the purchase of 18 planes to distribute spare parts and engines in Europe, was perceived as tailor-made for the Aviocar, a sturdy and adaptable STOL aircraft that has earned itself the nickname of the "jeep with wings." A U.S. defense contract for the C-212 would have been a crucial sales breakthrough.

The 18 aircraft required by the EDSA program would have accounted for 10 percent of the Aviocar C-212's production for the next five years. More importantly the contract would have meant that, as one CASA official put it, "with the Aviocar sporting a USAF logo our salesmen need only to pick up the phone to get more orders."

More than 350 Aviocars are currently operational worldwide, and the "jeep with wings" fulfills a variety of functions that range from covering regular commuter transport lines to carrying out military missions. But CASA's regular clients in Latin America have felt the recession deeply in the last year and orders have dipped. "A sales operation that took three to six months to complete at the beginning of the decade now takes one to two years," CASA's chairman, Fernando de Caralt, said at the company's annual general meeting this year.

Despite the setback, CASA is forging ahead with production of a new STOL aircraft, and here the linchpin is participation. An upgraded version of the Aviocar C-212, known as the CN-235, will be officially presented this year at the Farnborough show. It is the result of a 50-50 joint venture between CASA and the Indonesian aerospace company P.T. Nurtanio.

The CN-235 is sleeker, bigger and faster than the Aviocar. It is designed to carry a maximum of 40 passengers, compared with the C-212's 28, and is propelled by the more powerful GE T77-7 engine, against the Aviocar's Garrett TPE-331. Casa officials stress that more than an improved C-212 it is an entirely new plane. But the STOL principles of maximum toughness and versatility apply in both cases, and the CN-235 owes much to the marketing, design and mission knowledge acquired in the development of its predecessor.

With the CN-235, CASA is betting heavily on what Aerospace Industry analysts see as a market gap for middle-range turboprop passenger planes. Officials at CASA talk of a potential market of 1,800 units for civilian use and a further 600 for military use. De Havilland Canada's Dash Seven and Saab-Fairchild's SF-340

are among CASA's potential competitors in the commuter/utility category.

The joint venture with Nurtanio has opened up the Far East for CASA and, as a consequence, the experience has deeply impressed the advantages of participation on CASA officials. Participation and joint ventures are something of a guiding philosophy at the Spanish aerospace company, and it is no accident that West Germany's Messerschmitt-Bölkow-Blohm (MBB) has an 11-percent stake in CASA and that Northrop holds 13 percent (the Spanish state holding company Instituto Nacional de Industria, INI, holds 72 percent of CASA's shares).

The interest in participation has been underlined by CASA's decision to increase its share in the A-320 version of the European Airbus from 4.2 percent to 5.2 percent. It is, moreover, an increased share that notably improves the advanced technology contribution by CASA to the Airbus project.

In line with the Airbus participation, Spain and CASA are involved in the European Fighter Aircraft (EFA) project with France, Britain, West Germany and Italy to produce a new generation combat plane in the 1990s. CASA's participation in the EFA project is likely to be

around 10 percent. The political decision to carry out feasibility studies for the EFA was reached at a meeting of defense ministers of the five countries concerned that was held in July in Madrid.

The EFA plans meet the Spanish aerospace industry's key necessity of advanced technology. CASA had been hopeful that the decision of the Madrid government last year to buy 72 F-18A Hornet combat planes built by McDonnell Douglas would prompt a considerable transfer of technology. In the event, less has been forthcoming than CASA executives had been led to expect and the EFA project is seen as compensating for the shortfall.

A second compensator for somewhat strained relationships with the United States, caused by the limited F-18A transfers as much as by the disappointment over the EDSA contract, has been a memorandum of agreement signed in June between CASA and United Technologies' Sikorsky Aircraft. The memorandum establishes a long-term industrial cooperation between CASA and the U.S. helicopter manufacturing company.

CASA already assembles and produces a limited amount of parts of MBB's BO 105 helicopter. The memorandum with Sikorsky is on sim-

ilar, if slightly more ambitious, lines. Initially CASA will produce major components for the S-70B-60 helicopters and the agreement allows for the final assembly and flight test in Spain of the S-70B-60 series. Other provisions of the memorandum concern development of further areas of cooperation in product support, research and development and other commercial helicopter programs.

A final project of considerable importance for CASA concerns one of its wholly home-produced products, the C101, which is an advanced jet trainer that is sold almost exclusively to the Spanish air force. In December last year a new prototype, the C101-5, made a successful maiden flight. The aircraft has greater power and avionics.

CASA is now searching for partners to take the C101 series a major step further by developing and producing a tactical combat plane that would complement the EFA program. Through the EFA project CASA will be able to tap technology, and the Spanish aerospace company is now seeking interested participants in Latin America and/or the Far East for the promotion of the C101 project. A certain client for a new tactical combat plane would be the Spanish Air Force.

Brazil Sets Its Sights on Military Market

By Richard House

SAO PAULO — When the rapidly expanding aerospace industry of Brazil is described as a new comer to the field, Brazilians insist that in 1906 one of their number, Santos Dumont, was the first man ever to fly, and that aircraft have been designed and built in Brazil uninterruptedly since 1910.

Nevertheless, the great impetus has come in the last decade under supervision of the military-backed government, and sales of more than 3,000 Brazilian civilian and military planes have made Empresa Brasileira de Aeronáutica (Embraer), the national aircraft corporation, an important presence on world markets, awakening the more aggressive instincts of its competitors. In space, Brazil is developing its own launch vehicle and small satellites to complement the Canadian-built communications satellite it will put up early next year. This research has produced a generation of military rockets for export, including a new saturation missile system being used by Iraqi forces against Iranian ground troops in the latest Gulf offensive.

Embraer was set up 15 years ago, with 51 percent air ministry control, to build and market the Bandeirante (Bandit), a 14-passenger commuter propeller plane also

available in military patrol versions. So far, 434 planes have been sold to 26 nations, almost 100 of them to commuter airlines in the U.S. market. There, the Bandeirante turned aside a 1982 protectionist suit by Fairchild-Swearingen in Washington.

Embraer's president, Colonel Osiris Silva, hopes to avoid such litigation for the more sophisticated, 30-passenger Brasília airliner, which expects to receive approval from the Civil Aeronautics Board in early 1985. "There's no plane in the same class being projected or built in the United States; we are not taking the market away from anyone," he said in an interview at Embraer's headquarters in São José dos Campos. Embraer has received 111 orders for the \$5-million plane, and it expects to sell about 150. At the spring meeting of the U.S. Regional Airlines Association, the company received orders for 22 Brasília.

Embraer, which expects a \$240-million turnover in 1984, is not relying on exports alone. "Only aircraft producers with a solid base in the internal market are viable, and the export market alone doesn't sustain a company," Colonel Silva said. But adverse conditions in the civil aviation market have made Embraer look toward the military sector. "Our guess is that up to

1987 the emphasis will be military, but the option will depend on the way the market works," the colonel said.

Although overall sales will net less than from the Brasília, the new plane with the highest profile on Brazil's aviation scene is the T-27 Tucano, a \$1.5-million turboprop military trainer already in service with Brazil's air force and which is bringing big successes — and some diplomatic embarrassments. The two-seat Tucano is not an offensive weapon, but its secondary characteristic is for anti-air warfare, and so a sale in June of eight planes to the Central American government of Honduras raised some eyebrows among members of the Contadora Group, which Brazil supports. Honduras is a center for U.S.-backed military activity against Nicaragua's Sandinistas, and there were fears that the planes could be used thus.

A \$181-million contract to supply Egypt with 120 Tucanos, many of which will be assembled in Cairo, also foresees 80 of the planes being repainted to Iraq, which is a major buyer of Brazilian weapons. Such purchases offset Brazil's oil imports. Such sales of aircraft to conflict areas have caused domestic political furor, and Flavio Birrenbach, an opposition party congressman, has proposed a bill to prevent such deals. "I think Honduras will use the planes against the Sandinistas, and there is a chance for the Tucano to be used by Iraq against troops once Iran's air cover gets weaker," he said.

Embraer beat out the Swiss company Pilatus for the Egypt contract, and the two are again battling for a \$150-million contract to supply Britain's Royal Air Force with 155 new planes. "The final decision will be eminently political," Colonel Silva said. Accordingly, he has signed a joint production agreement with Britain's Shorts Brothers, which promises an additional 3,000 jobs in economically troubled Northern Ireland if the RAF chooses the Tucano. Pilatus has joined forces with British Aerospace. The two companies, which together have a 30-percent share of the small commuter aircraft sector, plan further cooperation.

Elsewhere, Brazil is negotiating a major aircraft sale and licensing agreement with China. Technically, Brazil's most ambitious partnership is with Italy, for the development of the AMX submarine strike jet. Despite a crash in Italy, Brazil's prototype will fly in June 1985 and will be in service by 1987. The agreement follows a 1970 contract to produce 182 Aermacchi 326 jet fighters in Brazil.

Embraer, with 30 percent of the \$600-million AMX project, has

high hopes that the Italians will again prove their skill in winning NATO contracts. At about \$10 million, the AMX is 50 percent cheaper than its rivals. But aviation is by no means Embraer alone — there are more than 500 small companies operating in Brazil, supplying parts such as landing-gear components for Boeing's 747 and seats for the European Airbus. Brazil also produces French-designed helicopters, and both Sikorsky and Italy's Agusta are studying the market. "It's like the U.S. model — the government pays for development and then lets private industry have the technology free of charge," said Roberto Pereira de Andrade, editor of the magazine Defense and Technology. This is just one of the ways in which the government indirectly subsidizes the aerospace industry, while planes like the Bandeirante remain "a U.S.-Canadian plane built with Brazilian labor," according to an Embraer official. The sales results, according to Mr. Birrenbach, are achieved by "subsidies, which the Brazilian people are paying for — prices are absurd and unreal."

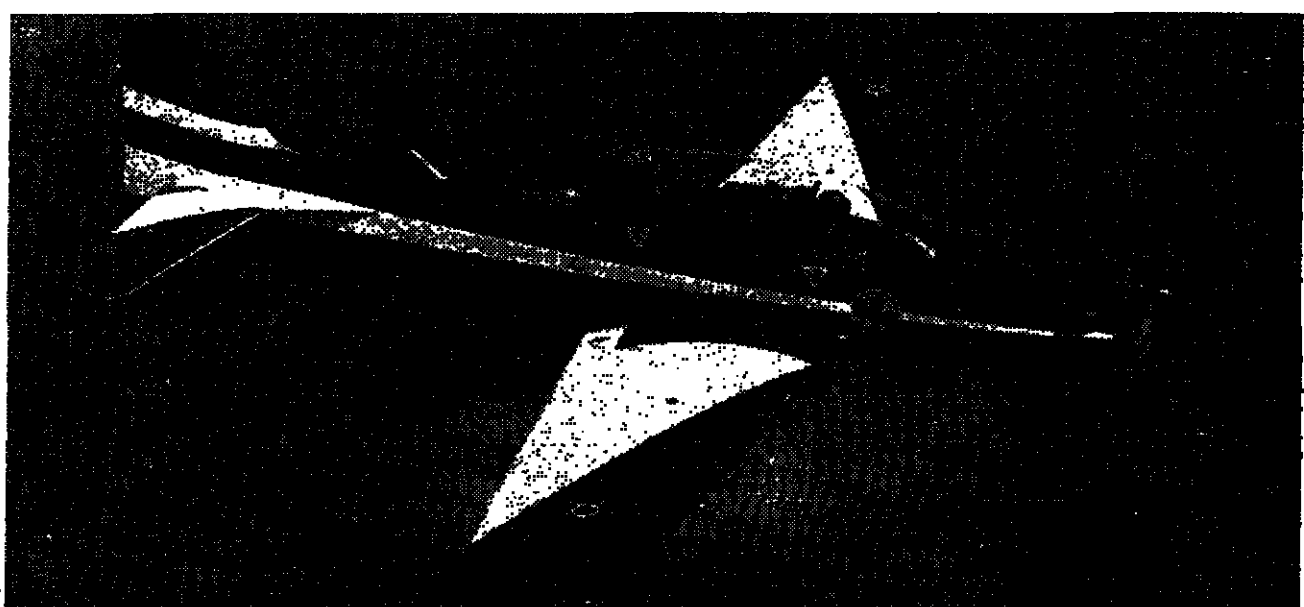
In August, Embraer's 7,300-member labor force went on strike for higher pay. Although the United States cleared Embraer on subsidy charges, aggressive pricing of the Bandeirante has forced one competitor, Israel's Arava, out of production. Mr. Birrenbach, a member of the congressional committee on national security, also charges that the paternalist hand of the military government and Embraer's virtual monopoly has strangled local enterprise in exchange for imported technology, citing a licensing agreement to build U.S.-designed Piper light aircraft.

"Embraer's activities have always been against private enterprise; the Piper agreement was absolutely unnecessary as Brazil had the expertise to make much better planes," Mr. Birrenbach said. But private investment is responsible for 90 percent of Embraer's capital, although the air force keeps control. But in space Brazil needed foreign expertise, although it now sells small rockets back to the U.S. National Aeronautics and Space Administration. Next year the European launch vehicle Ariane will put up the \$231-million Brasília, made by the Canadian company Spar-Hughes. The earth station near Rio de Janeiro has already been built. Brazil is developing a launch vehicle, with a 1,000-kilometer range, for its own small satellites, raising fears among its neighbors that such a ballistic system could also deliver a nuclear device.

Development of research rockets led to the formation in 1961 of Avibras, now the developing world's leading missile producer.



From Brazil: The EMB110 Bandeirante, above; the Tucano T-27 attack trainer, below.



Boeing, Airbus Vie for Sales in Africa

By Michael Selwyn

LONDON — The intense and long-running sales battle between the U.S. aircraft giant Boeing and the four-nation Airbus Industrie consortium is set to reach Africa, where national airlines will soon have to replace their aging intercontinental fleets.

The situation has been given impetus by Annex 16 of the International Civil Aviation Organization (ICAO), which sets strict noise limits at airports for landing and take-off. Annex 16 was first drafted in 1971 following a successful campaign among Western countries to reduce aircraft noise at major airports. Since 1971 governments have come to appreciate the need for stringent noise controls. The ICAO has no power to make the adoption of Annex 16 among its 140 members mandatory. However, the rule becomes effective in the United States in January 1985, and will become law throughout the European Community in January 1988.

The aircraft most affected by Annex 16 is the Boeing 707/720. For Africa's leading carriers the 707 is the mainstay of long-range services, and the 707 is still operated by the airlines of 17 countries in the Organization of African Unity.

In addition to the noise level, most of these aircraft, which were introduced in the 1950s, are increasingly expensive to maintain and are coming to the end of their operating life. For African carriers, replacement of the 150-190-seat 707 has become the only option. However, until recently, the lack of a suitable replacement has provided headaches for airline executives. The first generation of wide-bodied jets — the Boeing 747, McDonnell-Douglas DC-10, Lockheed L-1011 TriStar and Airbus A300 — were either too big or had a limited range. At present only a small percentage of jet aircraft operated by African airlines are wide-bodied and just seven OAU airlines — Royal Air Maroc, Air Algérie, Nigeria Airways, Air Gabon, Air Afrique, Cameroon Airlines and Air Madagascar — use 747s. With a seating capacity of 400, African carriers would be hard-pressed to fill them on their European services.

But the 1980s have witnessed the introduction of a new range of fuel-efficient, twin-engine wide-bodied aircraft more suited to African requirements. Boeing is offering the 767, which, according to Ronald Woodward, senior director

of sales for Africa, the Middle East and Latin America, "is the ideal replacement for the 707."

Airbus, on the other hand, has introduced a long-range variant of its A-300 — the A310-200 — which the marketing director for Africa, Fritz Winkelmans, said is "the next step after the 707." Both manufacturers are hoping for major African orders soon. Prime targets are Cameroon Airlines, TAAG-Linhas Aereas de Angola, Air Zimbabwe, Air Mauritius, Kenya Airways, Air Algérie, Royal Air Maroc and Uganda Airways.

Both sides are lobbying hard. The A310-200 has made promotional visits to the Ivory Coast, Nigeria, Gabon, Cameroon, Angola, Zambia, Zimbabwe, Madagascar and Mauritius, while the 767 has toured Ethiopia, Cameroon, Zambia, Zimbabwe and Angola. Airlines that have opted for the A310 are Air Algérie and Nigeria Airways. EgyptAir and Ethiopian Airlines have ordered three and two 767s, respectively. According to industry observers, the most significant of these orders is that of Ethiopian Airlines whose decision — Boeing executives believe — gives the manufacturer a headstart on the continent.

The A310 is probably Africa's fastest-growing carrier. Its network covers three continents — Africa, Europe and Asia — and comprises 31 destinations, stretching from Dakar to Peking. Since 1980 it has taken in steadily increasing profits, due mainly to its role in pioneering east-west African routes. Its flight-training school and maintenance base have won acclaim throughout Africa and the Middle East. Ethiopian carries out maintenance for Zambia Airways, Sudan Airways, Kenya Airways, Nigeria Airways, North Yemen's Yemenia and South Yemen's Alyemda — all Boeing 707 operators. Boeing officials visited Addis Ababa in early August to discuss designs for a new \$65-million 767 maintenance hangar. With Ethiopian set to become the first African carrier to offer comprehensive maintenance facilities for the 767, the incentive for other African carriers to follow Ethiopian's lead is strong.

Boeing will also be relying on its long history of sales in Africa and the fact that several carriers, such as Ethiopian, already operate an all-Boeing fleet.

On the other hand, Airbus officials point to the A300/310's excellent safety record, its penetration of the transatlantic market — Air France, Tunis Air and Air Guinée have ordered the shorter-

range A300 — and the reliability of its ECAM on-board navigation computer, developed by the French electronics conglomerate Thomson-CSF. In addition, the Airbus has a higher cargo-handling capacity than the 767, company officials said.

Yet, the technical merits of the A310 versus the 767 pale into insignificance when set against the financial resources of African airlines. Most carriers are undercapitalized and have continued to show heavy losses, in spite of the general upturn in world air traffic. African carriers are still small in world industry terms. According to the International Air Transport Association's 1983 statistics, only three African OAU operators — Air Algérie, EgyptAir and Nigeria Airways — figure in the ranking of its top 50 members, in terms of scheduled passenger-kilometers. In 1983, IATA traffic on north Atlantic services accounted for 72.2 percent of international revenue tonne-kilometers; on services between Europe and northern Africa the figure was just 2.4 percent and Europe and southern Africa 4.2 percent.

Four reasons can be given to explain why African carriers lag behind their Western competitors. First, too many airlines offer basically similar services without enough regional coordination. The African Airlines Association (Afravia) has campaigned strongly for greater cooperation, but the status of national flag-carriers' prime routes is still rated too highly. One attempt at co-ordination was made with the foundation in 1961 of Air Afrique, grouping 10 francophone countries in West and Central Africa. Yet, in mid-1984 the airline had debts of \$234 million and is having to impose staff and salary reductions.

Secondly, it is estimated that about \$1 billion of world airline revenues are blocked and that 65 percent of these are held in Africa. Local operators are probably owed one-quarter of this amount, and, therefore, cannot re-equip to take on foreign wide-bodied competition. Thirdly, African carriers' route networks are still basically north-south rather than east-west, which gives overseas operators an inherent advantage. Finally, African airlines have suffered from inadequate navigation infrastructure and substandard radar and inter-airport communication.

Given the \$50-million to \$60-million purchase price of a 767 or A310, including spares, re-equipment is bound to place a significant burden on the already tightly

stretched finances of African carriers. Multilateral agencies such as the World Bank do not provide concessional finance for aircraft purchases, so airlines have had no choice but to turn to commercial banks, which, since the Laker and Braniff insolvencies of 1982, have become wary of involvement. In the case of Ethiopian Airlines, the 767 order was financed by a \$101.1-million loan, provided by a consortium led by the U.S. Bankers Trust. The credit is guaranteed by the U.S. Export-Import Bank, which — for the first time — is providing an export credit guarantee as well as a standard financial guarantee. The loan is for eight years, at between 1 to 1½ percent above the London Interbank offered rate, a hefty burden for an airline with a capital of just \$55 million.

Burdensome financing terms have also led Sudan Airways to shelve an order, placed in 1982, for three A310s. Despite the aggressive attempts by EC governments to undercut Ex-Im Bank terms, the financing package offered by Airbus is still beyond the repayment capabilities of many potential African customers.

One possible way out for African airlines is to buy second-hand. The Lockheed TriStar 500, which is no longer in production, still has a good 10 to 15 years' operating life and could be put to effective use on Africa/Europe routes. Another option would be to buy a re-engineered DC-8, supplied by Camacorp, based in Pasadena, California, which is able to fly long distances nonstop and comply with noise regulations.

Thirdly, leasing may provide a breathing space. Air Mauritius, for example, has put off a decision on whether to buy the A310 or 767 in favor of leasing a Boeing 747SP from South African Airways for two years.

However, these solutions do not address themselves to the basic need for African airlines to cooperate more, if they are to match their overseas competitors. In the words of Tanzania's transport and communications minister, John Malecela: "The time has come for our countries to seriously think of merging their airlines."

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Disparities Between U.S. and European Fares Are Linked to a Lack of Competition

By Ronald Katz

PARIS — Paxton Dunn had a rude shock the last time he came to Paris. Mr. Dunn, executive director of the U.S. Council for International Business, flies frequently between New York and Washington to monitor legislation likely to affect business. On his last trip to Paris he considered flying to Geneva to check on UN activities.

Mr. Dunn hops a shuttle flight from New York to Washington, usually returning the same day. The recent roundtrip economy cost \$120, including a guaranteed seat. But the Paris-Geneva roundtrip economy fare is 2,040 French francs for roughly the same distance. At early August exchange rates, that was about \$231, or 92

percent more than the New York-Washington run.

Like many American businessmen, Mr. Dunn is puzzled. He wonders whether the often enormous difference between prices charged in the United States and Europe for flights of comparable distance can be justified. To answer his question is to pick one's way through a minefield of conflicting statistics. European airlines and their defenders argue that many of the comparisons are highly selective, focusing on the most expensive "normal" fares in Europe and the lowest so-called "promotional" fares in the United States. Moreover, the competition and range of fares offered on many U.S. routes make it hard to determine what a normal U.S. fare is. As the British Civil Aviation Authority noted: "Generalization is far more difficult than many commentators would have us believe."

Mr. Dunn's experience illustrates the CAA's point. His \$120 roundtrip shuttle flight was on a major scheduled airline. The same flight on another major carrier can run as high as \$210. But on one of the so-called "discount carriers," it could be less than half that price. What then is the "normal" U.S. fare?

But despite the cautionary note sounded by the CAA, intra-European fares are generally higher than American ones, sometimes dramatically so. These are some examples taken from a broader survey conducted by the magazine ICC Busi-

'Most European routes are devoid of any real competition in the price sense. According to the European Civil Aviation Conference, between 75 and 80 percent of the ton-kilometers on intra-European flights are subject to pooling agreements between airlines of countries concerned.'

ness World: Paris is roughly as far from Geneva as Houston is from Dallas. But a major scheduled airline quotes \$111 as its economy class roundtrip fare between those two Sunbelt centers. The European fare is more than double the American one. Paris-Zurich, a 960-kilometer roundtrip, was priced at 2,270 French francs, about \$257; Boston-Philadelphia (976 kilometers roundtrip) was quoted at \$242; while an Indianapolis-Detroit flight (996 kilometers roundtrip) cost \$240. Paris-Athens (4,185 kilometers roundtrip) cost 6,300 French francs, about \$713 in early August; Chicago-Miami (4,272 kilometers roundtrip) was priced at \$512 on five major scheduled lines. On a relatively noncompetitive route of similar distance, Boston-Memphis, the principal scheduled airline priced its unrestricted economy class ticket at \$596 return, making the European fare 20 per-

cent higher, and this with the dollar at historic levels.

European authorities explain these apparent disparities by citing higher costs in Europe per seat-kilometer, caused by stiffer expenses for crew, fuel, maintenance and landing charges. The International Air Transport Association (IATA) produced a study in 1982 showing European crew costs more than two times higher than American ones, fuel costs were 45 percent higher, maintenance costs 75 percent higher and landing charges an astounding five times higher. Some of those figures are worth a second look.

Why, for example, should European fuel costs be so much higher than American ones when oil prices have been decontrolled in the United States and oil there is priced at world market levels? Similarly, why should European crew costs be so much higher, even with steeper Eu-

ropean social charges factored in, when U.S. airline employees, as a group, are among the best paid in the nation? Finally, would more competition among European airlines bring some of those costs down?

Lack of competition may be at the heart of the matter. Most European routes are devoid of any real competition in the price sense. According to the European Civil Aviation Conference (ECAC), between 75 and 80 percent of the ton-kilometers on intra-European flights are subject to pooling agreements between airlines of the countries concerned. Some of these agreements are quite rigid, specifying an equal sharing of revenues and capacity. In its COMPAS report, ECAC concluded: "To the extent that pooling agreements reduce competition...there may be also less pressure on the pool partners to reduce costs."

Whether European airlines are overstaffed is not always easy to determine, although one striking illustration is British Airways, which has cut its staff from 57,000 to 37,000 over the last few years while still flying virtually the same route structure. In the United States, too, there have been substantial productivity gains, perhaps spurred by fierce competition.

Two new developments may offer fresh hope for European air travelers. The first is a recently concluded deal between the British and Dutch governments abrogating the old bilateral agreement between the two countries in favor of a regime that allows "country of origin" pricing, that is, no veto power by one country over the innovative fares of the other. Already British Airways has introduced a restricted \$49 (\$65) roundtrip fare between London and Amsterdam, and the Dutch have responded in kind.

This represents the first crack in the spectrum of rigidly controlled fares in Europe, and, if traffic is diverted to these two major centers, other countries could be compelled to follow their lead.

The second is the European Commission's Civil Aviation Memorandum No. 2, a modest proposal calling for some limits on pooling, "zones of flexibility" on the price of some tickets and moderate curbs on government intervention. The proposal, now before the Council of Ministers, is intended to bring

airline transport within the competition rules of the Treaty of Rome. But many governments will resist, since they have no wish to see a European solution to a question they regard as a linchpin of national sovereignty.

Ronald Katz is secretary of the Airport Transport Commission of the International Chamber of Commerce in Paris. This article expresses his own views and are not necessarily those of the commission.



A Flurry of Options Steps Up Fare War Across the Pacific

By Dinah Lee

HONG KONG — The canny Asian traveler would rather be caught dead than be seen paying full economy fare for a trip to the U.S. West Coast — and no one can blame him. A quick call to any reputable travel agent in Hong Kong will cut his ticket costs by half, due to the currently fierce competition among more than half a dozen airlines now crossing the Pacific.

Although officially almost all the airlines deny participating in the fare war between North America and the countries of southeast Asia, one telephone inquiry produced a flurry of options, from Pan American's roundtrip flight to Los Angeles from Hong Kong for \$717.94 to the bargain favorite of many, Korean Air, which will take you to Los Angeles and back via Seoul for \$564.10. (Korean Airlines changed its name to Korean Air following the Soviet downing last year of a KAL flight from New York while it was over Russian airspace.)

Even Singapore Airlines, which models itself on the elegant Swissair and recouls at the mention of cut-rate tickets, was on the list too, offering tickets to Los Angeles for \$705.12, a substantial saving over its full economy ticket costing \$1,308.

Small wonder then that airlines on Pacific routes, including Pan Am, Japan Airlines, China Airlines, United, Korean, Cathay Pacific, Singapore Airlines, Northwest Orient and Continental Airlines, the latest comer, regard the irresistible growth potential of trans-Pacific routes as almost a mixed blessing.

According to the International Air Transport Association's forecasts, growth in passenger traffic between North America and the Far East will be between 6 and 7 percent over the next two years, while growth in cargo traffic will be slightly higher. This compares favorably with an estimated annual growth worldwide of nearly 4.5 percent for passengers and slightly more than 5 percent for cargo.

The airlines personnel based in Asia give the ready impression that they are attacking the Pacific challenge with gusto, but their eagerness to cull information about others' airlines rather than divulge facts about their own is an indication of their true wariness. Most impressive among the competitors when it comes to ready statistics on the region and a visible marketing strategy is Japan Airlines, the only Asian airline among the three pioneers of trans-Pacific service.

The other two pioneers, Pan Am and Northwest Orient, look back on the Carter administration's deregulation of U.S. landing rights, in exchange for wider competition over the Pacific, with regret. But JAL's deputy manager for passenger sales, Tsumehisa Hayami, recently disagreed with the American contention that the Japanese got the better of the deal.

"No, I don't think so," Mr. Hayami said. "Generally speaking, I don't agree with deregulation, which America would like to take as their policy. But in the U.S.-Japan bilateral air agreement signed after the war, the United States had strong powers, and the agreement was not equal. The cities in the United States that we can fly to even now are too limited."

For the moment, JAL, the dominant carrier both inside Japan and throughout the entire Far East, can theoretically fly to nine cities in the United States, while the competing U.S. airlines serve 16. The Japanese would like to add Houston, Dallas or Atlanta to their list, which already includes New York, San Francisco, Los Angeles, Seattle,

Chicago, Guam, Honolulu, Anchorage and Fairbanks, as available destinations. Not all of these are used by JAL, however.

Secondly, JAL complains that it is not free to fly beyond the United States, except to São Paulo and Rio de Janeiro, whereas the U.S. carriers can go anywhere in southeast Asia via Tokyo. For all of these alleged restraints, the Japanese airline's tested formula of package tours, complete with hotel and sightseeing, have won it 50 percent of all Japanese travel in the region, and 24 percent of non-Japanese flying from Tokyo across the Pacific, giving them about 35 percent of the total of 4.3 million passengers flying from Tokyo to North America last year.

"We need to improve our sales to foreigners," said Mr. Hayami, who perceives that JAL's image to outsiders may be "too aggressive."

With so many airlines as aggressive as JAL, the seat capacity now on offer is around 6.5 million a year, exceeding demand by more than 2 million. All the airlines are earnestly trying to maximize their "load factors," or seats filled. Most average a 70-80 percent load factor, but beyond that, profits are determined by the price paid for the tickets filling the airplane, or "the yield."

The newly arrived regional director for sales for Pan Am, Cassell Meyers, said: "It's tough. We are competing with national carriers inside and outside the Asian region, which are a source of national pride and enjoy limitless advertising and promotion budgets. It's an extremely price-sensitive region."

Pan Am retaliates by concentrating on selling Asian destinations primarily to U.S. travelers, and emphasizing their experience as the first to cross the Pacific, rather than falling in line with the Asian airlines' familiar sell-off of exotic stewardesses. Mr. Meyers confirmed the continuation of a trend that was evident more than a year ago among Asian airlines of aiming sales at the business traveler, who travels frequently and develops preferences among airlines based on punctuality and service on-board.

"The business traveler is very service sensitive and not so price sensitive; he's the hottest thing going," Mr. Meyers said. Pan Am's "yield improvement" program begun last spring included changing their fare structure and increasing the number of seats. Singapore Airlines, the only privately owned Asian carrier in the race, is trying to upgrade its image, which suffered serious damage last year when a flight from New York was shot down by the Soviet Union over Russian airspace. According to Joseph Tung, passenger sales manager in Hong Kong, Korean Airline's transformation includes a new logo and a new "prestige class" as well as its new name.

Image building can backfire, as Cathay learned last year. In a highly touted switch of advertising firms, Cathay launched a series of advertisements featuring Michael York, the British actor, as Marco Polo, exploiting the East-West image of the Italian explorer as a sort of 13th-century business commuter in a fur-lined cape. A Cathay spokesman now reflects that the airlines overestimated the fame of Marco Polo as an international traveler, and a new campaign is under way for autumn. However, 45 percent of last year's Cathay customers were business people, and the airline continued to be the London-based Swire group's main contributor of profits.



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A SPECIAL REPORT ON AEROSPACE

Airline Marketing Gimmicks Go Beyond the Frills

By Joan M. Feldman

WASHINGTON — Twice a day, every day except Saturday, you can fly Regent Air between New York and Los Angeles sitting in a private compartment, have your nails manicured, hair fixed or dictate a letter. One-way fare is \$810, including limousine service at both ends. Or, twice a day, every day, including one 2 A.M. departure, you can fly People Express between Newark and Los Angeles, for \$119 or \$149. On these flights, you pay for every additional service, from a picnic basket to checked baggage.

These extremes mark the outer limits of the current state of airline marketing gimmicks. Carriers in the United States and abroad offer every permutation in-between to snag customers.

Most airlines agree that the timing and frequency of flights is their primary marketing tool. Business passengers, who account for 51 percent of total U.S. traffic and two-thirds of the revenue, care about schedules. But if many airlines offer similar schedules from the same points, more is necessary to attract the high-margin business passenger.

In 1981 American Airlines initiated a new marketing plan to accomplish just that. That plan and subsequent copies of it are known generically as frequent flyer programs. Thomas Pickett, senior vice president for marketing at American, calls it "the single most important marketing program ever undertaken by American."

The airline dreamed it up to compete with new airlines, which use their lower costs to offer better service at discounted fares to gain a market foothold against incumbents like American. American countered with free flights and discounted fares for frequent passengers.

United and other airlines matched American, but some carriers held out. "We were as cynical as the next guy," recalls Peter McHugh, vice president for passenger marketing at Trans World Airlines.

"We were convinced we didn't need it," says Charles Demoney, head of marketing for Frontier Airlines at that time and now senior vice president for marketing of New York Air.

TWA, Frontier and others soon changed their minds.

"[We] would be hard-pressed to attract and keep loyal frequent fliers if we did not have the program," said Joyce Bennis, manager of TWA's frequent flyer plan. Mr. Demoney cannot say how much traffic Frontier lost to United at its Denver hub, but he insists, "we know what it did for us" when Frontier joined American's advantage plan. "The mere fact that the small airlines are joining [the plan] shows their importance," says Robert Jockle, airline analyst for Shearson Lehman/American Express. There are negative aspects, too. There are administrative costs — American admits to at least \$1 million a

International carriers have become partners in the U.S. lines' programs. That allows U.S. carriers to offer more exotic trips as rewards.

month — as well as the costs of free travel. Pan Am blames some of its recent losses on travelers claiming their free trips before an airline-imposed deadline.

The concept is spreading. International carriers, from British Airways to Qantas, have become partners in the U.S. lines' programs. That allows U.S. carriers to offer more exotic trips as rewards, and helps foreign airlines prevent diversion of traffic. Hotels, car-rental firms and cruise lines also are participating.

Another war is over separate business-class sections. Many new small lines such as Midway MetroLink and Air One in the United States offer one-class service, trumpeted as equivalent or close to big-airline first class at coach fares. New York Air gives New York-Washington passengers newspapers, legroom, wine, beer, bagels and cream cheese.

Of the big airlines, only TWA has a domestic U.S. business class, offered on all of its wide-bodied

aircraft. It even has slumber seats in the United States, until now a strictly international, first-class offering.

International business class, meanwhile, is practically an art form. Heavy competition now makes it harder to distinguish between first class and business sections. Outside Europe, though, European first class is still better than that offered by U.S. airlines.

International business-class passengers get advance check-in and seat selection; separate airport check-in counters; private airport lounges; secretarial services; selection of entrees; slumber seats; a better quality of wine and liquor and, in the case of Far East carriers, bilingual business cards. The toughest international fight has been over the size of the business-class seat. Trans-Atlantic carriers recently had an advertising war over the number of inches by which their seats were wider.

Despite appearances, not all airline marketing is aimed at the business traveler. Regent Air, which carries a maximum of 35 passengers, makes no bones about wanting the affluent travelers who do not have to worry about free trips. Conspicuous consumption is its gimmick. Even the rest room is called a *salle de bain*, while meals are planned by a Los Angeles chef.

Others, like People Express, appeal to bargain-hunters. People Express is after travelers wanting the lowest possible price and not caring about frills. In fact, a First Boston Corp. airline analyst, Michael Derchin, once said People "is the only new airline to create a new market." Until recently, People flew mostly underserved routes. Now it is bringing its low-fare, no-frill concept to big-airline markets such as between Newark and Minneapolis, Los Angeles and Chicago.

The marketing stakes are about to escalate even more. "Free" flights or better service at lower fares are not always enough. Beginning in September, Midway MetroLink, in a fight for its life against bigger airlines and People's low fares in Chicago, will offer American Express card credits to its frequent fliers. According to Midway's chairman, Arthur C. Bass, in a reference to his company's mostly Midwestern route network, "No one wants another trip to Detroit."

Used Market a Fertile Ground For Cultivating New Buyers

By Lew Townsend

WICHITA, Kansas — The world's major jetliner producers — Boeing, McDonnell Douglas, Airbus Industrie — have discovered what automobile dealers have known for years: There is money in the used market, and it is fertile ground for cultivating future buyers of new models.

Boeing, which has built 60 percent of the 7,000 jetliners flying today, has become the most aggressive in the used-jetliner market, embracing it as a completely new and major line of business.

James A. Bine, Boeing vice president for international government and used aircraft sales, predicts that by the end of 1985 Boeing will have acquired — and, he hopes, sold — about 100 used jetliners worth \$1 billion.

Mr. Bine was to report at the Farnborough show that since last year the company has sold or leased 14 used Boeing 747s, seven used Boeing 727 trijets, three McDonnell Douglas DC-10s and two Lockheed Corp. L-1011s. Contrary to Mr. Bine's initial belief that the majority of the company's used jetliners would go to Third World countries, most have been peddled to U.S. domestic airlines, mainly charter carriers.

McDonnell Douglas and Airbus Industrie, although battling Boeing and each other at every twist and

turn on sales of new models, have not entered the used market with the same gusto. Their actions reflect a continuing desire to deal in used jetliners only as an adjunct service to their new-plane customers, often acting merely as brokers in bringing buyers and sellers together.

All three manufacturers were forced into being more active in the used-plane business by the recession, when the world's airlines balked at placing orders for new models unless they could unload some of their old ones. That was a problem because of a glut of used planes on the market, especially wide-bodied aircraft like Boeing 747 jumbo jets, McDonnell Douglas DC-10s and Airbus A300s, as well as Lockheed's L-1011s built by Lockheed Corp., which earlier discontinued its jetliner production.

Much of that has changed, according to the manufacturers. "What we have found is that the extra capacity — all the used aircraft — that was the most evident in the early part of last year has gone away, especially DC-10s," said Elaine Bendell, spokeswoman for Douglas Aircraft Co., Long Beach, California, McDonnell Douglas' jetliner subsidiary.

"Our used aircraft unit has been used mostly as a locating service for customers," she said. "Let's say you're a [McDonnell Douglas] DC-9 operator and you're looking for some used DC-9s. The likelihood is that we would know where such airplanes might be, since we keep records on all owners. So, we have been assisting in the locating and placing of used aircraft with other carriers rather than seeking to take them as trade-ins."

McDonnell Douglas's most notable used-plane deal involved Alitalia. While dickering with the manufacturer in late 1982 over an order for 30 new MD-80 twinjets, the Italian airline insisted that McDonnell Douglas take nearly 20 of its aging Boeing 727 trijets as a trade-in. McDonnell Douglas since has placed all of the 727s with People Express, the Newark-based low-fare airline that now is causing fits among some major carriers with its expanding service.

By most accounts, Airbus, the youngest of the major builders, has been the least active in the used jetliner market. Its most notable coup in this arena was the placement of two used A300s it obtained from West Germany's Lufthansa with relatively new Northeastern International, the Fort Lauderdale, Florida-based low-fare airline. It was the first expansion of Airbus' penetration into U.S. domestic service since Eastern Airlines began flying some of its models a few years ago.

While McDonnell Douglas and Airbus indicate no plans to significantly increase their activities in

the used jetliners, Boeing is proceeding at full-throttle in this market.

Boeing's creation of a special used-plane branch and the naming of a vice president to run the operation came to a head in 1983, after the company was forced to raise an increasing number of trade-ins in order to close any sales of its new models.

Conducting a special study, the company found that out of nearly 400 airlines in the world using Boeing jetliners, only 71 carriers — less than 20 percent — were flying aircraft that they bought brand new from the factory.

The study showed that the fleets of the rest were either entirely used jetliners — 217 airlines — that were bought on the used-plane market or a mixture of new and used models — 105 airlines.

Five years ago, 65 percent of all Boeing operators were flying all new fleets; they wouldn't fly anything they didn't buy brand new Boeing's, Mr. Bine said. He said the company study also showed that about 250 jetliners were sold in the used-plane market in 1983, 46 more than all the new Boeing models delivered that year.

The study prompted a reversal in Boeing's previous policy of shunning trade-ins whenever it could. Now it actively encourages them.

During preparations for the Farnborough show, Boeing officials disclosed that in addition to the approximately 70 used jetliners that the company has acquired since early 1983, agreements also have been made to accept an undisclosed number of additional L1011s from Japan's All-Nippon Airways and Delta Air Lines (Boeing acquired 11 used L1011s from Delta last year, six of which still are unsold), and five Airbus A300s from Singapore Airlines.

Boeing used-plane activities are coupled with a separate program at Wichita's Boeing Military Airplane Co., which is attempting to convert used jetliners to military use. Among other things, BMCAC is marketing — but has yet to announce its first sale — of what is called the "707 Tanker." It essentially is a used Boeing 707 jetliner that has been overhauled, updated and converted into an aerial refueling tanker.

In a separate program, BMCAC also is buying used airline 707s, cannibalizing their engines and re-installing them on KC-135 refueling tankers flown by the U.S. Air Force Reserve and Air National Guard units.

From Boeing's viewpoint, converting used airline jetliners into military aircraft is the best of all worlds. Not only does it offer a potential new source of revenue, it rides the market of excess used jetliners that can compete for sales of its new models.

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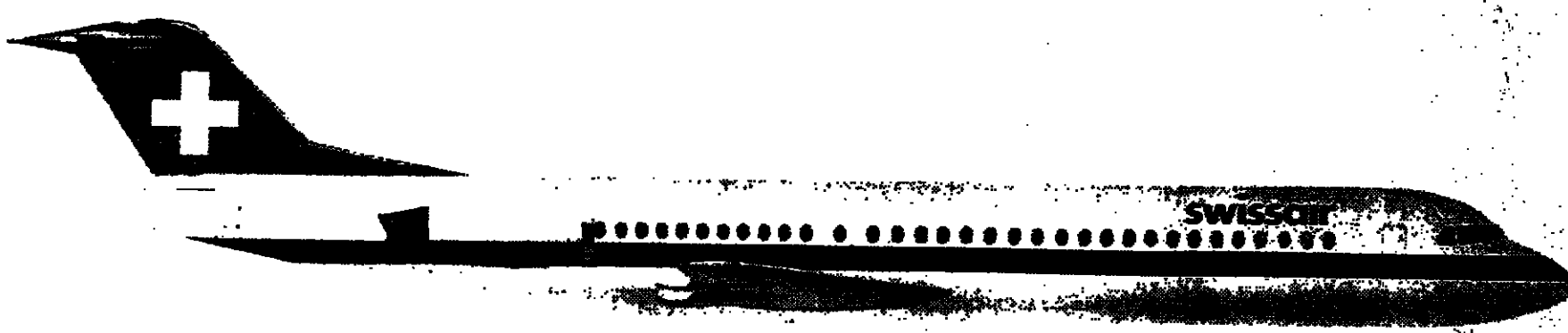
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aerodynamics, new technology engines, and modern avionics with CAT 3A capability for landing in adverse weather conditions. It will meet all known future restrictions for noise and pollution levels. And, with its low trip mile cost, the short-to-medium haul Fokker 100 is the ideal aircraft to serve Swissair for years to come.

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NYSE Most Actives

| Vol. | High | Low | Last | Chg. |
|-------|---------|---------|---------|-------|
| 3,000 | 120 1/4 | 119 3/4 | 120 1/4 | + 1/8 |
| 2,500 | 119 3/4 | 119 1/4 | 119 3/4 | + 1/4 |
| 2,000 | 119 1/4 | 118 3/4 | 119 1/4 | + 1/8 |
| 1,500 | 118 3/4 | 118 1/4 | 118 3/4 | + 1/4 |
| 1,000 | 118 1/4 | 117 3/4 | 118 1/4 | + 1/8 |
| 750 | 117 3/4 | 117 1/4 | 117 3/4 | + 1/4 |
| 500 | 117 1/4 | 116 3/4 | 117 1/4 | + 1/8 |
| 250 | 116 3/4 | 116 1/4 | 116 3/4 | + 1/4 |
| 100 | 116 1/4 | 115 3/4 | 116 1/4 | + 1/8 |
| 50 | 115 3/4 | 115 1/4 | 115 3/4 | + 1/4 |

Dow Jones Averages

| Index | High | Low | Last | Chg. |
|--------|---------|---------|---------|-------|
| Indus. | 120 1/4 | 119 3/4 | 120 1/4 | + 1/8 |
| Trans. | 119 3/4 | 119 1/4 | 119 3/4 | + 1/4 |
| Comp. | 119 1/4 | 118 3/4 | 119 1/4 | + 1/8 |
| Unch. | 118 3/4 | 118 1/4 | 118 3/4 | + 1/4 |
| Vol. | 118 1/4 | 117 3/4 | 118 1/4 | + 1/8 |
| New | 117 3/4 | 117 1/4 | 117 3/4 | + 1/4 |
| High | 117 1/4 | 116 3/4 | 117 1/4 | + 1/8 |
| Low | 116 3/4 | 116 1/4 | 116 3/4 | + 1/4 |
| Volume | 116 1/4 | 115 3/4 | 116 1/4 | + 1/8 |
| Down | 115 3/4 | 115 1/4 | 115 3/4 | + 1/4 |

NYSE Index

| Index | High | Low | Last | Chg. |
|-----------|---------|---------|---------|-------|
| Composite | 120 1/4 | 119 3/4 | 120 1/4 | + 1/8 |
| Indus. | 119 3/4 | 119 1/4 | 119 3/4 | + 1/4 |
| Trans. | 119 1/4 | 118 3/4 | 119 1/4 | + 1/8 |
| Comp. | 118 3/4 | 118 1/4 | 118 3/4 | + 1/4 |
| Unch. | 118 1/4 | 117 3/4 | 118 1/4 | + 1/8 |
| Vol. | 117 3/4 | 117 1/4 | 117 3/4 | + 1/4 |
| New | 117 1/4 | 116 3/4 | 117 1/4 | + 1/8 |
| High | 116 3/4 | 116 1/4 | 116 3/4 | + 1/4 |
| Low | 116 1/4 | 115 3/4 | 116 1/4 | + 1/8 |
| Volume | 115 3/4 | 115 1/4 | 115 3/4 | + 1/4 |
| Down | 115 1/4 | 114 3/4 | 115 1/4 | + 1/8 |

Friday's NYSE Closing

| Vol. | High | Low | Last | Chg. |
|-------|---------|---------|---------|-------|
| 3,000 | 120 1/4 | 119 3/4 | 120 1/4 | + 1/8 |
| 2,500 | 119 3/4 | 119 1/4 | 119 3/4 | + 1/4 |
| 2,000 | 119 1/4 | 118 3/4 | 119 1/4 | + 1/8 |
| 1,500 | 118 3/4 | 118 1/4 | 118 3/4 | + 1/4 |
| 1,000 | 118 1/4 | 117 3/4 | 118 1/4 | + 1/8 |
| 750 | 117 3/4 | 117 1/4 | 117 3/4 | + 1/4 |
| 500 | 117 1/4 | 116 3/4 | 117 1/4 | + 1/8 |
| 250 | 116 3/4 | 116 1/4 | 116 3/4 | + 1/4 |
| 100 | 116 1/4 | 115 3/4 | 116 1/4 | + 1/8 |
| 50 | 115 3/4 | 115 1/4 | 115 3/4 | + 1/4 |

AMEX Diaries

| Index | High | Low | Last | Chg. |
|-----------|---------|---------|---------|-------|
| Composite | 120 1/4 | 119 3/4 | 120 1/4 | + 1/8 |
| Indus. | 119 3/4 | 119 1/4 | 119 3/4 | + 1/4 |
| Trans. | 119 1/4 | 118 3/4 | 119 1/4 | + 1/8 |
| Comp. | 118 3/4 | 118 1/4 | 118 3/4 | + 1/4 |
| Unch. | 118 1/4 | 117 3/4 | 118 1/4 | + 1/8 |
| Vol. | 117 3/4 | 117 1/4 | 117 3/4 | + 1/4 |
| New | 117 1/4 | 116 3/4 | 117 1/4 | + 1/8 |
| High | 116 3/4 | 116 1/4 | 116 3/4 | + 1/4 |
| Low | 116 1/4 | 115 3/4 | 116 1/4 | + 1/8 |
| Volume | 115 3/4 | 115 1/4 | 115 3/4 | + 1/4 |
| Down | 115 1/4 | 114 3/4 | 115 1/4 | + 1/8 |

NASDAQ Index

| Index | High | Low | Last | Chg. |
|-----------|---------|---------|---------|-------|
| Composite | 120 1/4 | 119 3/4 | 120 1/4 | + 1/8 |
| Indus. | 119 3/4 | 119 1/4 | 119 3/4 | + 1/4 |
| Trans. | 119 1/4 | 118 3/4 | 119 1/4 | + 1/8 |
| Comp. | 118 3/4 | 118 1/4 | 118 3/4 | + 1/4 |
| Unch. | 118 1/4 | 117 3/4 | 118 1/4 | + 1/8 |
| Vol. | 117 3/4 | 117 1/4 | 117 3/4 | + 1/4 |
| New | 117 1/4 | 116 3/4 | 117 1/4 | + 1/8 |
| High | 116 3/4 | 116 1/4 | 116 3/4 | + 1/4 |
| Low | 116 1/4 | 115 3/4 | 116 1/4 | + 1/8 |
| Volume | 115 3/4 | 115 1/4 | 115 3/4 | + 1/4 |
| Down | 115 1/4 | 114 3/4 | 115 1/4 | + 1/8 |

AMEX Most Actives

| Vol. | High | Low | Last | Chg. |
|-------|---------|---------|---------|-------|
| 3,000 | 120 1/4 | 119 3/4 | 120 1/4 | + 1/8 |
| 2,500 | 119 3/4 | 119 1/4 | 119 3/4 | + 1/4 |
| 2,000 | 119 1/4 | 118 3/4 | 119 1/4 | + 1/8 |
| 1,500 | 118 3/4 | 118 1/4 | 118 3/4 | + 1/4 |
| 1,000 | 118 1/4 | 117 3/4 | 118 1/4 | + 1/8 |
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| 500 | 117 1/4 | 116 3/4 | 117 1/4 | + 1/8 |
| 250 | 116 3/4 | 116 1/4 | 116 3/4 | + 1/4 |
| 100 | 116 1/4 | 115 3/4 | 116 1/4 | + 1/8 |
| 50 | 115 3/4 | 115 1/4 | 115 3/4 | + 1/4 |

NYSE Most Actives

| Vol. | High | Low | Last | Chg. |
|-------|---------|---------|---------|-------|
| 3,000 | 120 1/4 | 119 3/4 | 120 1/4 | + 1/8 |
| 2,500 | 119 3/4 | 119 1/4 | 119 3/4 | + 1/4 |
| 2,000 | 119 1/4 | 118 3/4 | 119 1/4 | + 1/8 |
| 1,500 | 118 3/4 | 118 1/4 | 118 3/4 | + 1/4 |
| 1,000 | 118 1/4 | 117 3/4 | 118 1/4 | + 1/8 |
| 750 | 117 3/4 | 117 1/4 | 117 3/4 | + 1/4 |
| 500 | 117 1/4 | 116 3/4 | 117 1/4 | + 1/8 |
| 250 | 116 3/4 | 116 1/4 | 116 3/4 | + 1/4 |
| 100 | 116 1/4 | 115 3/4 | 116 1/4 | + 1/8 |
| 50 | 115 3/4 | 115 1/4 | 115 3/4 | + 1/4 |

NYSE Trading Slowest in Year

United Press International

NEW YORK — Prices on the New York Stock Exchange were lifted Friday by some last-minute buying, but the volume of 57.46 million shares was the slowest in more than a year as Wall Street's big players left early for the Labor Day holiday.

Analysis said averages rebounded when some traders replaced borrowed shares sold earlier prior to the three-day weekend. The market will be closed Monday.

A few oil stocks ran into trouble on reports from London that Libya effectively has discounted the price of its crude oil \$2.80 a barrel by reducing taxes on oil companies producing its crude.

The Dow Jones industrial average, down about three points most of the day after losing 3.64 Thursday, gained 1.10 to 1,224.38. The Dow lost 12.15 for the week overall but climbed 109.10 points for the month of August.

Advancing stocks led declining ones by a ratio of about 8 to 6. Volume totaled 57.5 million, down from the 70.8 million traded Thursday. It was the slowest since 53 million changed hands Aug. 29, 1983.

"It would be silly to draw any conclusions from today's session since 90 percent of the institutional community is gone for the Labor Day weekend," said Robert Kahan of Montgomery Securities, San Francisco.

"But I think there is going to be a rally after Labor Day. I think the market is going to work its way higher before the elections and if interest rates break, look out."

Some initial selling was triggered by the Federal Reserve's report late Thursday that U.S. money supply rose \$1.7 billion in the latest statistical week.

The increase was larger than experts had expected and made already concerned investors more nervous about the course of Fed intentions on the interest rate front. Bonds were firm, although federal funds rates traded at 11 1/4 percent.

Late Friday, the government reported that farm prices were unchanged in August from July. That was good news for inflation and the consumer, but bad news for the farmer.

Ralston-Purina was the most active NYSE-listed issue, up 1/4 to 29 1/4 following a block of 1.55 million shares at 28 1/4. Ralston has agreed to buy ITT's Continental Baking unit for \$475 million cash. ITT was unchanged at 27.

Ohio Edison was the second most active issue, up 1/4 to 12 after blocks of 800,000 shares crossed at 11 1/4 and 900,000 shares at 11 1/4.

Financial Corp. of America, owner of troubled American Savings & Loan, was third on the list, off 1/4 to 54 1/4. FCA, which declared a regular quarterly dividend of 17 cents, is expected to abandon its strategy of fixed-rate loans under its new chairman, William Popjoy.

Among the oils, Exxon lost 1/4 to 42 1/4. Mobil 1/4 to 29 1/4. Chevron 1/4 to 36 1/4. Amerasia-Hess 1/4 to 28 1/4. Phillips 1/4 to 39 1/4. Atlantic Richfield 1/4 to 49 1/4. Ohio Standard 1/4 to 47 1/4 and Indiana Standard 1/4 to 57.

Hewlett-Packard rose 1/4 to 39 1/4. The stock fell 2 1/4 late Thursday on a large block trade. Hewlett-Packard said rumors about the production schedule of its new Spectrum computer were pure speculation.

NYSE Most Actives

| Vol. | High | Low | Last | Chg. |
|-------|---------|---------|---------|-------|
| 3,000 | 120 1/4 | 119 3/4 | 120 1/4 | + 1/8 |
| 2,500 | 119 3/4 | 119 1/4 | 119 3/4 | + 1/4 |
| 2,000 | 119 1/4 | 118 3/4 | 119 1/4 | + 1/8 |
| 1,500 | 118 3/4 | 118 1/4 | 118 3/4 | + 1/4 |
| 1,000 | 118 1/4 | 117 3/4 | 118 1/4 | + 1/8 |
| 750 | 117 3/4 | 117 1/4 | 117 3/4 | + 1/4 |
| 500 | 117 1/4 | 116 3/4 | 117 1/4 | + 1/8 |
| 250 | 116 3/4 | 116 1/4 | 116 3/4 | + 1/4 |
| 100 | 116 1/4 | 115 3/4 | 116 1/4 | + 1/8 |
| 50 | 115 3/4 | 115 1/4 | 115 3/4 | + 1/4 |

AMEX Diaries

| Index | High | Low | Last | Chg. |
|-----------|---------|---------|---------|-------|
| Composite | 120 1/4 | 119 3/4 | 120 1/4 | + 1/8 |
| Indus. | 119 3/4 | 119 1/4 | 119 3/4 | + 1/4 |
| Trans. | 119 1/4 | 118 3/4 | 119 1/4 | + 1/8 |
| Comp. | 118 3/4 | 118 1/4 | 118 3/4 | + 1/4 |
| Unch. | 118 1/4 | 117 3/4 | 118 1/4 | + 1/8 |
| Vol. | 117 3/4 | 117 1/4 | 117 3/4 | + 1/4 |
| New | 117 1/4 | 116 3/4 | 117 1/4 | + 1/8 |
| High | 116 3/4 | 116 1/4 | 116 3/4 | + 1/4 |
| Low | 116 1/4 | 115 3/4 | 116 1/4 | + 1/8 |
| Volume | 115 3/4 | 115 1/4 | 115 3/4 | + 1/4 |
| Down | 115 1/4 | 114 3/4 | 115 1/4 | + 1/8 |

NASDAQ Index

| Index | High | Low | Last | Chg. |
|-----------|---------|---------|---------|-------|
| Composite | 120 1/4 | 119 3/4 | 120 1/4 | + 1/8 |
| Indus. | 119 3/4 | 119 1/4 | 119 3/4 | + 1/4 |
| Trans. | 119 1/4 | 118 3/4 | 119 1/4 | + 1/8 |
| Comp. | 118 3/4 | 118 1/4 | 118 3/4 | + 1/4 |
| Unch. | 118 1/4 | 117 3/4 | 118 1/4 | + 1/8 |
| Vol. | 117 3/4 | 117 1/4 | 117 3/4 | + 1/4 |
| New | 117 1/4 | 116 3/4 | 117 1/4 | + 1/8 |
| High | 116 3/4 | 116 1/4 | 116 3/4 | + 1/4 |
| Low | 116 1/4 | 115 3/4 | 116 1/4 | + 1/8 |
| Volume | 115 3/4 | 115 1/4 | 115 3/4 | + 1/4 |
| Down | 115 1/4 | 114 3/4 | 115 1/4 | + 1/8 |

NYSE Most Actives

| Vol. | High | Low | Last | Chg. |
|-------|---------|---------|---------|-------|
| 3,000 | 120 1/4 | 119 3/4 | 120 1/4 | + 1/8 |
| 2,500 | 119 3/4 | 119 1/4 | 119 3/4 | + 1/4 |
| 2,000 | 119 1/4 | 118 3/4 | 119 1/4 | + 1/8 |
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| 100 | 116 1/4 | 115 3/4 | 116 1/4 | + 1/8 |
| 50 | 115 3/4 | 115 1/4 | 115 3/4 | + 1/4 |

NYSE Most Actives

| Vol. | High | Low | Last | Chg. |
|-------|---------|---------|---------|-------|
| 3,000 | 120 1/4 | 119 3/4 | 120 1/4 | + 1/8 |
| 2,500 | 119 3/4 | 119 1/4 | 119 3/4 | + 1/4 |
| 2,000 | 119 1/4 | 118 3/4 | 119 1/4 | + 1/8 |
| 1,500 | 118 3/4 | 118 1/4 | 118 3/4 | + 1/4 |
| 1,000 | 118 1/4 | 117 3/4 | 118 1/4 | + 1/8 |
| 750 | 117 3/4 | 117 1/4 | 117 3/4 | + 1/4 |
| 500 | 117 1/4 | 116 3/4 | 117 1/4 | + 1/8 |
| 250 | 116 3/4 | 116 1/4 | 116 3/4 | + 1/4 |
| 100 | 116 1/4 | 115 3/4 | 116 1/4 | + 1/8 |
| 50 | 115 3/4 | 115 1/4 | 115 3/4 | + 1/4 |

AMEX Diaries

| Index | High | Low | Last | Chg. |
|-----------|---------|---------|---------|-------|
| Composite | 120 1/4 | 119 3/4 | 120 1/4 | + 1/8 |
| Indus. | 119 3/4 | 119 1/4 | 119 3/4 | + 1/4 |
| Trans. | 119 1/4 | 118 3/4 | 119 1/4 | + 1/8 |
| Comp. | 118 3/4 | 118 1/4 | 118 3/4 | + 1/4 |
| Unch. | 118 1/4 | 117 3/4 | 118 1/4 | + 1/8 |
| Vol. | 117 3/4 | 117 1/4 | 117 3/4 | + 1/4 |
| New | 117 1/4 | 116 3/4 | 117 1/4 | + 1/8 |
| High | 116 3/4 | 116 1/4 | 116 3/4 | + 1/4 |
| Low | 116 1/4 | 115 3/4 | 116 1/4 | + 1/8 |
| Volume | 115 3/4 | 115 1/4 | 115 3/4 | + 1/4 |
| Down | 115 1/4 | 114 3/4 | 115 1/4 | + 1/8 |

NASDAQ Index

| Index | High | Low | Last | Chg. |
|-----------|---------|---------|---------|-------|
| Composite | 120 1/4 | 119 3/4 | 120 1/4 | + 1/8 |
| Indus. | 119 3/4 | 119 1/4 | 119 3/4 | + 1/4 |
| Trans. | 119 1/4 | 118 3/4 | 119 1/4 | + 1/8 |
| Comp. | 118 3/4 | 118 1/4 | 118 3/4 | + 1/4 |
| Unch. | 118 1/4 | 117 3/4 | 118 1/4 | + 1/8 |
| Vol. | 117 3/4 | 117 1/4 | 117 3/4 | + 1/4 |
| New | 117 1/4 | 116 3/4 | 117 1/4 | + 1/8 |
| High | 116 3/4 | 116 1/4 | 116 3/4 | + 1/4 |
| Low | 116 1/4 | 115 3/4 | 116 1/4 | + 1/8 |
| Volume | 115 3/4 | 115 1/4 | 115 3/4 | + 1/4 |
| Down | 115 1/4 | 114 3/4 | 115 1/4 | + 1/8 |

| Vol. | High | Low | Last | Chg. |
|-------|---------|---------|---------|-------|
| 3,000 | 120 1/4 | 119 3/4 | 120 1/4 | + 1/8 |
| 2,500 | 119 3/4 | 119 1/4 | 119 3/4 | + 1/4 |
| 2,000 | 119 1/4 | 118 3/4 | 119 1/4 | + 1/8 |
| 1,500 | 118 3/4 | 118 1/4 | 118 3/4 | + 1/4 |
| 1,000 | 118 1/4 | 117 3/4 | 118 1/4 | + 1/8 |
| 750 | 117 3/4 | 117 1/4 | 117 3/4 | + 1/4 |
| 500 | 117 1/4 | 116 3/4 | 117 1/4 | + 1/8 |
| 250 | 116 3/4 | 116 1/4 | 116 3/4 | + 1/4 |
| 100 | 116 1/4 | 115 3/4 | 116 1/4 | + 1/8 |
| | | | | |
| 2,000 | 115 3/4 | 115 1/4 | 115 3/4 | + 1/4 |
| 1,500 | 115 1/4 | 114 3/4 | 115 1/4 | + 1/8 |
| 1,000 | 114 3/4 | 114 1/4 | 114 3/4 | + 1/4 |
| 750 | 114 1/4 | 113 3/4 | 114 1/4 | + 1/8 |
| 500 | 113 3/4 | 113 1/4 | 113 3/4 | + 1/4 |
| 250 | 113 1/4 | 112 3/4 | 113 1/4 | + 1/8 |
| 100 | 112 3/4 | 112 1/4 | 112 3/4 | + 1/4 |
| | | | | |
| 1,500 | 112 1/4 | 111 3/4 | 112 1/4 | + 1/8 |
| 1,000 | 111 3/4 | 111 1/4 | 111 3/4 | + 1/4 |
| 750 | 111 1/4 | 110 3/4 | 111 1/4 | + 1/8 |
| 500 | 110 3/4 | 110 1/4 | 110 3/4 | + 1/4 |
| 250 | 110 1/4 | 109 3/4 | 110 1/4 | + 1/8 |
| 100 | 109 3/4 | 109 1/4 | 109 3/4 | + 1/4 |
| | | | | |
| 1,000 | 109 1/4 | 108 3/4 | 109 1/4 | + 1/8 |
| 750 | 108 3/4 | 108 1/4 | 108 3/4 | + 1/4 |
| 500 | 108 1/4 | 107 3/4 | 108 1/4 | + 1/8 |
| 250 | 107 3/4 | 107 1/4 | 107 3/4 | + 1/4 |
| 100 | 107 1/4 | 106 3/4 | 107 1/4 | + 1/8 |
| | | | | |
| 1,000 | 106 3/4 | 106 1/4 | 106 3/4 | + 1/4 |
| 750 | 106 1/4 | 105 3/4 | 106 1/4 | + 1/8 |
| 500 | 105 3/4 | 105 1/4 | 105 3/4 | + 1/4 |
| 250 | 105 1/4 | 104 3/4 | 105 1/4 | + 1/8 |
| 100 | 104 3/4 | 104 1/4 | 104 3/4 | + 1/4 |
| | | | | |
| 1,000 | 104 1/4 | 103 3/4 | 104 1/4 | + 1/8 |
| 750 | 103 3/4 | 103 1/4 | 103 3/4 | + 1/4 |
| 500 | 103 1/4 | 102 3/4 | 103 1/4 | + 1/8 |
| 250 | 102 3/4 | 102 1/4 | 102 3/4 | + 1/4 |
| 100 | 102 1/4 | 101 3/4 | 102 1/4 | + 1/8 |
| | | | | |
| 1,000 | 101 3/4 | 101 1/4 | 101 3/4 | + 1/4 |
| 750 | 101 1/4 | 100 3/4 | 101 1/4 | + 1/8 |
| 500 | 100 3/4 | 100 1/4 | 100 3/4 | + 1/4 |
| 250 | 100 1/4 | 99 3/4 | 100 1/4 | + 1/8 |
| 100 | 99 3/4 | 99 1/4 | 99 3/4 | + 1/4 |
| | | | | |
| 1,000 | 99 1/4 | 98 3/4 | 99 1/4 | + 1/8 |
| 750 | 98 3/4 | 98 1/4 | 98 3/4 | + 1/4 |
| 500 | 98 1/4 | 97 3/4 | 98 1/4 | + 1/8 |
| 250 | 97 3/4 | 97 1/4 | 97 3/4 | + 1/4 |
| 100 | 97 1/4 | 96 3/4 | 97 1/4 | + 1/8 |
| | | | | |
| 1,000 | 96 3/4 | 96 1/4 | 96 3/4 | + 1/4 |
| 750 | 96 1/4 | 95 3/4 | 96 1/4 | + 1/8 |
| 500 | 95 3/4 | 95 1/4 | 95 3/4 | + 1/4 |
| 250 | 95 1/4 | 94 3/4 | 95 1/4 | + 1/8 |
| 100 | 94 3/4 | 94 1/4 | 94 3/4 | + 1/4 |
| | | | | |
| 1,000 | 94 1/4 | 93 3/4 | 94 1/4 | + 1/8 |
| 750 | 93 3/4 | 93 1/4 | 93 3/4 | + 1/4 |
| 500 | 93 1/4 | 92 3/4 | 93 1/4 | + 1/8 |
| 250 | 92 3/4 | 92 1/4 | 92 3/4 | + 1/4 |
| 100 | 92 1/4 | 91 3/4 | 92 1/4 | + 1/8 |
| | | | | |
| 1,000 | 91 3/4 | 91 1/4 | 91 3/4 | + 1/4 |
| 750 | 91 1/4 | 90 3/4 | 91 1/4 | + 1/8 |
| 500 | 90 3/4 | 90 1/4 | 90 3/4 | + 1/4 |
| 250 | 90 1/4 | 89 3/4 | 90 1/4 | + 1/8 |
| 100 | 89 3/4 | 89 1/4 | 89 3/4 | + 1/4 |
| | | | | |
| 1,000 | 89 1/4 | 88 3/4 | 89 1/4 | + 1/8 |
| 750 | 88 3/4 | 88 1/4 | 88 3/4 | + 1/4 |
| 500 | 88 1/4 | 87 3/4 | 88 1/4 | + 1/8 |
| 250 | 87 3/4 | 87 1/4 | 87 3/4 | + 1/4 |
| 100 | 87 1/4 | 86 3/4 | 87 1/4 | + 1/8 |
| | | | | |
| 1,000 | 86 3/4 | 86 1/4 | 86 3/4 | + 1/4 |
| 750 | 86 1/4 | 85 3/4 | 86 1/4 | + 1/8 |
| 500 | 85 3/4 | 85 1/4 | 85 3/4 | + 1/4 |
| 250 | 85 1/4 | 84 3/4 | 85 1/4 | + 1/8 |
| 100 | 84 3/4 | 84 1/4 | 84 3/4 | + 1/4 |
| | | | | |
| 1,000 | 84 1/4 | 83 3/4 | 84 1/4 | + 1/8 |
| 750 | 83 3/4 | 83 1/4 | 83 3/4 | + 1/4 |
| 500 | 83 1/4 | 82 3/4 | 83 1/4 | + 1/8 |
| 250 | 82 3/4 | 82 1/4 | 82 3/4 | + 1/4 |
| 100 | 82 1/4 | 81 3/4 | 82 1/4 | + 1/8 |
| | | | | |
| 1,000 | 81 3/4 | 81 1/4 | 81 3/4 | + 1/4 |
| 750 | 81 1/4 | 80 3/4 | 81 1/4 | + 1/8 |
| 500 | 80 3/4 | 80 1/4 | 80 3/4 | + 1/4 |
| 250 | 80 1/4 | 79 3/4 | 80 1/4 | + 1/8 |
| 100 | 79 3/4 | 79 1/4 | 79 3/4 | + 1/4 |
| | | | | |
| 1,000 | 79 1/4 | 78 3/4 | 79 1/4 | + 1/8 |
| 750 | 78 3/4 | 78 1/4 | 78 3/4 | + 1/4 |
| 500 | 78 1/4 | 77 3/4 | 78 1/4 | + 1/8 |
| 250 | 77 3/4 | 77 1/4 | 77 3/4 | + 1/4 |
| 100 | 77 1/4 | 76 3/4 | 77 1/4 | + 1/8 |
| | | | | |
| 1,000 | 76 3/4 | 76 1/4 | 76 3/4 | + 1/4 |
| 750 | 76 1/4 | 75 3/4 | 76 1/4 | + 1/8 |
| 500 | 75 3/4 | 75 1/4 | 75 3/4 | + 1/4 |
| 250 | 75 1/4 | 74 3/4 | 75 1/4 | + 1/8 |
| 100 | 74 3/4 | 74 1/4 | 74 3/4 | + 1/4 |
| | | | | |
| 1,000 | 74 1/4 | 73 3/4 | 74 1/4 | + 1/8 |
| 750 | 73 3/4 | 73 1/4 | 73 3/4 | + 1/4 |
| 500 | 73 1/4 | 72 3/4 | 73 1/4 | + 1/8 |
| 250 | 72 3/4 | 72 1/4 | 72 3/4 | + 1/4 |
| 100 | 72 1/4 | 71 3/4 | 72 1/4 | + 1/8 |
| | | | | |
| 1,000 | 71 3/4 | 71 1/4 | 71 3/4 | + 1/4 |
| 750 | 71 1/4 | 70 3/4 | 71 1/4 | + 1/8 |
| 500 | 70 3/4 | 70 1/4 | 70 3/4 | + 1/4 |
| 250 | 70 1/4 | 69 3/4 | 70 1/4 | + 1/8 |
| 100 | 69 3/4 | 69 1/4 | 69 3/4 | + 1/4 |
| | | | | |
| 1,000 | 69 1/4 | 68 3/4 | 69 1/4 | + 1/8 |
| 750 | 68 3/4 | 68 1/4 | 68 3/4 | + 1/4 |
| 500 | 68 1/4 | 67 3/4 | 68 1/4 | + 1/8 |
| 250 | 67 3/4 | 67 1/4 | 67 3/4 | + 1/4 |
| 100 | 67 1/4 | 66 3/4 | 67 1/4 | + 1/8 |
| | | | | |
| 1,000 | 66 3/4 | 66 1/4 | 66 3/4 | + 1/4 |
| 750 | 66 1/4 | 65 3/4 | 66 1/4 | + 1/8 |
| 500 | 65 3/4 | 65 1/4 | 65 3/4 | + 1/4 |
| 250 | 65 1/4 | 64 3/4 | 65 1/4 | + 1/8 |
| 100 | 64 3/4 | 64 1/4 | 64 3/4 | + 1/4 |
| | | | | |
| 1,000 | 64 1/4 | 63 3/4 | 64 1/4 | + 1/8 |
| 750 | 63 3/4 | 63 1/4 | 63 3/4 | + 1/4 |
| 500 | 63 1/4 | 62 3/4 | 63 1/4 | + 1/8 |
| 250 | 62 3/4 | 62 1/4 | 62 3/4 | + 1/4 |
| 100 | 62 1/4 | 61 3/4 | 62 1/4 | + 1/8 |
| | | | | |
| 1,000 | 61 3/4 | 61 1/4 | 61 3/4 | + 1/4 |
| 750 | 61 1/4 | 60 3/4 | 61 1/4 | + 1/8 |
| 500 | 60 3/4 | 60 1/4 | 60 3/4 | + 1/4 |
| 250 | 60 1/4 | 59 3/4 | 60 1/4 | + 1/8 |
| 100 | 59 3/4 | 59 1/4 | 59 3/4 | + 1/4 |
| | | | | |
| 1,000 | 59 1/4 | 58 3/4 | 59 1/4 | + 1/8 |
| 750 | 58 3/4 | 58 1/4 | 58 3/4 | + 1/4 |
| 500 | 58 1/4 | 57 3/4 | 58 1/4 | + 1/8 |
| 250 | 57 3/4 | 57 1/4 | 57 3/4 | + 1/4 |
| 100 | 57 1/4 | 56 3/4 | 57 1/4 | + 1/8 |
| | | | | |
| 1,000 | 56 3/4 | 56 1/4 | 56 3/4 | + 1/4 |
| 750 | 56 1/4 | 55 3/4 | 56 1/4 | + 1/8 |
| 500 | 55 3/4 | 55 1/4 | 55 3/4 | + 1/4 |
| 250 | 55 1/4 | 54 3/4 | 55 1/4 | + 1/8 |
| 100 | 54 3/4 | 54 1/4 | 54 3/4 | + 1/4 |
| | | | | |
| 1,000 | 54 1/4 | 53 3/4 | 54 1/4 | + 1/8 |
| 750 | 53 3/4 | 53 1/4 | 53 3/4 | + 1/4 |
| 500 | 53 1/4 | 52 3/4 | 53 1/4 | + 1/8 |
| 250 | 52 3/4 | 52 1/4 | 52 3/4 | + 1/4 |
| 100 | 52 1/4 | 51 3/4 | 52 1/4 | + 1/8 |
| | | | | |
| 1,000 | 51 3/4 | 51 1/4 | 51 3/4 | + 1/4 |
| 750 | 51 1/4 | 50 3/4 | 51 1/4 | + 1/8 |
| 500 | 50 3/4 | 50 1/4 | 50 3/4 | + 1/4 |
| 250 | 50 1/4 | 49 3/4 | 50 1/4 | + 1/8 |
| 100 | 49 3/4 | 49 1/4 | 49 3/4 | + 1/4 |
| | | | | |
| 1,000 | 49 1/4 | 48 3/4 | 49 1/4 | + 1/8 |
| 750 | 48 3/4 | 48 1/4 | 48 3/4 | + 1/4 |
| 500 | 48 1/4 | 47 3/4 | 48 1/4 | + 1/8 |
| 250 | 47 3/4 | 47 1/4 | 47 3/4 | + 1/4 |
| 100 | 47 1/4 | 46 3/4 | 47 1/4 | + 1/8 |
| | | | | |
| 1,000 | 46 3/4 | 46 1/4 | 46 3/4 | + 1/4 |
| 750 | 46 1/4 | 45 3/4 | 46 1/4 | + 1/8 |
| 500 | 45 3/4 | 45 1/4 | 45 3/4 | + 1/4 |
| 250 | 45 1/4 | 44 3/4 | 45 1/4 | + 1/8 |
| 100 | 44 3/4 | 44 1/4 | 44 3/4 | + 1/4 |
| | | | | |
| 1,000 | 44 1/4 | 43 3/4 | 44 1/4 | + 1/8 |
| 750 | 43 3/4 | 43 1/4 | 43 3/4 | + 1/4 |
| 500 | 43 1/4 | 42 3/4 | 43 1/4 | + 1/8 |
| 250 | 42 3/4 | 42 1/4 | 42 3/4 | + 1/4 |
| 100 | 42 1/4 | 41 3/4 | 42 1/4 | + 1/8 |
| | | | | |
| 1,000 | 41 3/4 | 41 1/4 | 41 3/4 | + 1/4 |
| 750 | 41 1/4 | 40 3/4 | 41 1/4 | + 1/8 |
| 500 | 40 3/4 | 40 1/4 | 40 3/4 | + 1/4 |
| 250 | 40 1/4 | 39 3/4 | 40 1/4 | + 1/8 |
| 100 | 39 3/4 | 39 1/4 | 39 3/4 | + 1/4 |
| | | | | |
| 1,000 | 39 1/4 | 38 3/4 | 39 1/4 | + 1/8 |
| 750 | 38 3/4 | 38 1/4 | 38 3/4 | + 1/4 |
| 500 | 38 1/4 | 37 3/4 | 38 1/4 | + 1/8 |
| 250 | 37 3/4 | 37 1/4 | 37 3/4 | + 1/4 |
| 100 | 37 1/4 | 36 3/4 | 37 1/4 | + 1/8 |
| | | | | |
| 1,000 | 36 3/4 | 36 1/4 | 36 3/4 | + 1/4 |
| 750 | 36 1/4 | 35 3/4 | 36 1/4 | + 1/8 |
| 500 | 35 3/4 | 35 1/4 | 35 3/4 | + 1/4 |
| 250 | 35 1/4 | 34 3/4 | 35 1/4 | + 1/8 |
| 100 | 34 3/4 | 34 1/4 | 34 3/4 | + 1/4 |
| | | | | |
| 1,000 | 34 1/4 | 33 3/4 | 34 1/4 | + 1/8 |
| 750 | 33 3/4 | 33 1/4 | 33 3/4 | + 1/4 |
| 500 | 33 1/4 | 32 3/4 | 33 1/4 | + 1/8 |
| 250 | 32 3/4 | 32 1/4 | 32 3/4 | + 1/4 |
| 100 | 32 1/4 | 31 3/4 | 32 1/4 | + 1/8 |
| | | | | |
| 1,000 | 31 3/4 | 31 1/4 | 31 3/4 | + 1/4 |
| 750 | 31 1/4 | 30 3/4 | 31 1/4 | + 1/8 |
| 500 | 30 3/4 | 30 1/4 | 30 3/4 | + 1/4 |
| 250 | 30 1/4 | 29 3/4 | 30 1/4 | + 1/8 |
| 100 | 29 3/4 | 29 1/4 | 29 3/4 | + 1/4 |
| | | | | |
| 1,000 | 29 1/4 | 28 3/4 | 29 1/4 | + 1/8 |
| 750 | 28 3/4 | 28 1/4 | 28 3/4 | + 1/4 |
| 500 | 28 1/4 | 27 3/4 | 28 1/4 | + 1/8 |
| 250 | 27 3/4 | 27 1/4 | 27 3/4 | + 1/4 |
| 100 | 27 1/4 | 26 3/4 | 27 1/4 | + 1/8 |
| | | | | |
| 1,000 | 26 3/4 | 26 1/4 | 26 3/4 | + 1/4 |
| 750 | 26 1/4 | 25 3/4 | 26 1/4 | + 1/8 |
| 500 | 25 3/4 | 25 1/4 | 25 3/4 | + 1/4 |
| 250 | 25 1/4 | 24 3/4 | 25 1/4 | + 1/8 |
| 100 | 24 3/4 | 24 1/4 | 24 3/4 | + 1/4 |
| | | | | |
| 1,000 | 24 1/4 | 23 3/4 | 24 1/4 | + 1/8 |
| 750 | 23 3/4 | 23 1/4 | 23 3/4 | + 1/4 |
| 500 | 23 1/4 | 22 3/4 | 23 1/4 | + 1/8 |
| 250 | 22 3/4 | 22 1/4 | 22 3/4 | + 1/4 |
| 100 | 22 1/4 | 21 3/4 | 22 1/4 | + 1/8 |
| | | | | |
| 1,000 | 21 3/4 | 21 1/4 | 21 3/4 | + 1/4 |
| 750 | 21 1/4 | 20 3/4 | 21 1/4 | + 1/8 |
| 500 | 20 3/4 | 20 1/4 | 20 3/4 | + 1/4 |
| 250 | 20 1/4 | 19 3/4 | 20 1/4 | + 1/8 |
| 100 | 19 3/4 | 19 1/4 | 19 3/4 | + 1/4 |
| | | | | |
| 1,000 | 19 1/4 | 18 | | |

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16 Wyoming
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19 Grimm opener
20 Penny
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33 " — ever
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35 — bity
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124 Kinsman
127 Woolen cloth
128 "The
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63 Arafat's gp.
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74 Sponsorship
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84 Poker term
85 Sand belated
86 Flower part
87 — Lorraine
88 Newcastle
nappies
90 A TD earns six
of these
93 British V.I.P.
group
94 One end of a
class

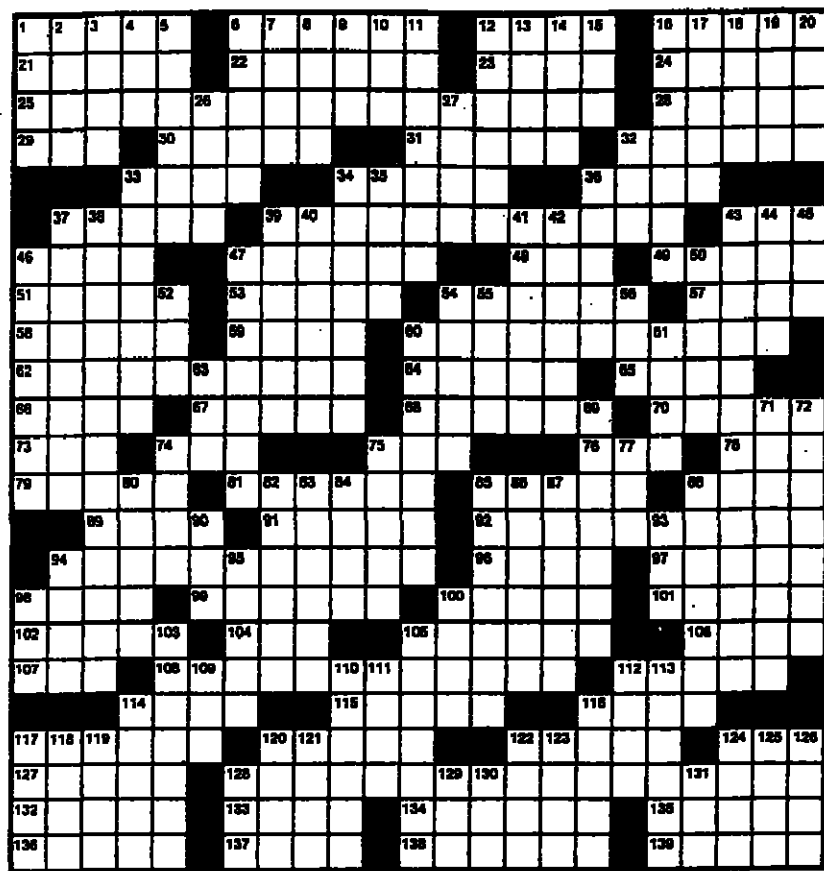
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109 Biblical verb
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124 Saucy one
125 "And lead us
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126 Worst, in a way
128 Quasimodo's
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129 Ab — (from
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130 Decalogue ad-
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131 Pindar product

Critics' Quips By Warren W. Reich



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BOOKS

THE FOURTH PROTOCOL
By Frederick Forsyth. 389 pp. \$17.95.
Viking, 40 West 23rd Street,
New York, N.Y. 10010.

Reviewed by Roderick MacLeish

FREDERICK FORSYTH has become a rich man writing thrillers starting with "The Day of the Jackal" and proceeding through "The Odessa File," "The Dogs of War," etc. He has also become, apparently, a British Tory who regards the present Labor Party as a nesting place for Hand Left sleepers who will, on a given day, awaken to do the Soviet Union's bidding.

But Forsyth's new novel, "The Fourth Protocol," is not a hot-eyed tract. Forsyth is, first and foremost, an entertainer. His political proclivities provide him with basic assumptions on which his story is based; they are not obsessions which the story must serve and justify. As a reporter he has furnished his new novel with plausible-sounding descriptions of power's physical establishments — British, Soviet and South African.

"The Fourth Protocol" (the title is derived from a subclause of the 1968 Nuclear Non-Proliferation Treaty under which the signatories agree not to smuggle nuclear devices into each other's territory) begins on New Year's Eve, 1986. Margaret Thatcher still governs Britain, she is preparing for one, last election campaign against Neil Kincock's wishy-washy Labour leadership, and there is a jewel heist in a fashionable London apartment house. The thief steals a briefcase in which to carry away his swag, discovers that classified documents are hidden in its lining, and patriotic British hood that he is, mails them back to Her Majesty's appropriate ministry.

This triggers an MI-5 investigation of who's leaking secret documents and to whom. Enter John Preston, mid-40s, a former army intelligence operator in Ulster, now employed as a second-class civilian servant in MI-5. If "The Fourth Protocol" has heroes, Preston is one of them. He is an attractive, low-keyed man — divorced, underpaid, harassed by

the old networks and career ambitions of his masters.

The other hero — in that he, like Preston, engages our interest as a man fighting a solitary battle against his country's bureaucracy and leadership — is General Yevgeny Sergeevich Karpov of the Soviet KGB. Karpov, a specialist in British affairs, discovers that an important anti-British cape is in the Moscow works and that the KGB has been excluded from it. Boring in from the outside, Karpov finds out about Plan Aurora — a scheme concocted by the aging (and unnamed) General Secretary of the Soviet Communist Party and four confidantes including a by-now-deceased Kim Philby, the British traitor who defected to the Soviet Union in 1963.

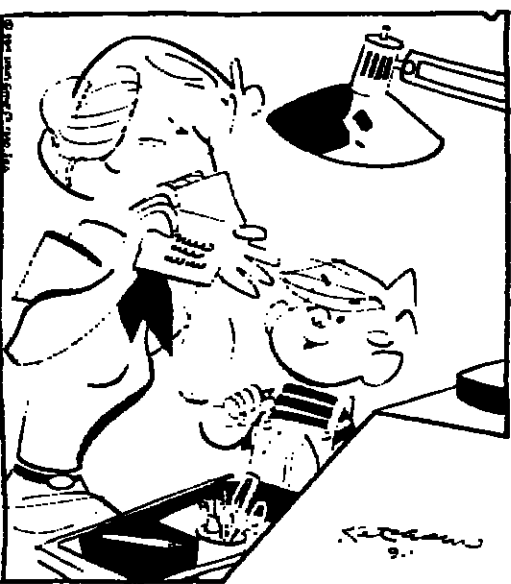
Under Plan Aurora a Soviet agent is smuggled into Britain. He is supposed to detonate a small nuclear device near an American air base a few days before the forthcoming British general election. In the least plausible part of Forsyth's plot, the bomb blast is supposed to scare 10 percent of the British electorate into voting Labor. Once in power, Neil Kincock will be deposed and Britain's first Marxist-Leninist prime minister will take over, unilaterally dismantling the country, kicking out the Americans, withdrawing Britain from NATO and otherwise making the old goats in Moscow drool with happiness.

Back in Britain, John Preston is supposed to uncover the plot before it's too late. As usual, no spoiling the fun here by telling you how it all comes out.

"The Fourth Protocol" has people in it, unlike the one-dimensional characters of "The Day of the Jackal" and "The Dogs of War." They are interesting people, even the repellent ones. Four books and a few million dollars after "Jackal" Forsyth has become a well-rounded novelist. "The Fourth Protocol" is his best book so far.

Roderick MacLeish is a news commentator on National Public Radio, U.S.A. His most recent novel is "Prince Omara." He wrote this review for The Washington Post.

DENNIS THE MENACE



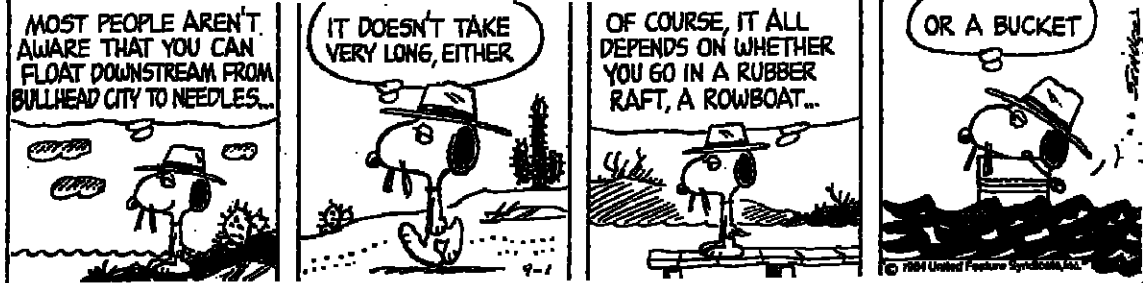
"MR. WILSON SAYS I SHOULD HAVE A ZIP CODE ALL MY OWN!"

WEATHER

| EUROPE | | | | ASIA | | | |
|---------------|------|-----|-------|----------------|------|-----|-------|
| Area | High | Low | Wind | Area | High | Low | Wind |
| Amsterdam | 58 | 48 | 10-15 | Beijing | 62 | 52 | 10-15 |
| Berlin | 58 | 48 | 10-15 | Bombay | 62 | 52 | 10-15 |
| London | 58 | 48 | 10-15 | Calcutta | 62 | 52 | 10-15 |
| Paris | 58 | 48 | 10-15 | Delhi | 62 | 52 | 10-15 |
| Rome | 58 | 48 | 10-15 | Manila | 62 | 52 | 10-15 |
| Stockholm | 58 | 48 | 10-15 | Seoul | 62 | 52 | 10-15 |
| Vienna | 58 | 48 | 10-15 | Singapore | 62 | 52 | 10-15 |
| Zurich | 58 | 48 | 10-15 | Taipei | 62 | 52 | 10-15 |
| MIDDLE EAST | | | | AFRICA | | | |
| Amman | 58 | 48 | 10-15 | Algiers | 62 | 52 | 10-15 |
| Beirut | 58 | 48 | 10-15 | Cairo | 62 | 52 | 10-15 |
| Jerusalem | 58 | 48 | 10-15 | Harare | 62 | 52 | 10-15 |
| Tel Aviv | 58 | 48 | 10-15 | Johannesburg | 62 | 52 | 10-15 |
| OCEANIA | | | | LATIN AMERICA | | | |
| Auckland | 58 | 48 | 10-15 | Buenos Aires | 62 | 52 | 10-15 |
| Manila | 58 | 48 | 10-15 | Lima | 62 | 52 | 10-15 |
| Singapore | 58 | 48 | 10-15 | Mexico City | 62 | 52 | 10-15 |
| Tokyo | 58 | 48 | 10-15 | Rio de Janeiro | 62 | 52 | 10-15 |
| NORTH AMERICA | | | | NORTH AMERICA | | | |
| Atlanta | 58 | 48 | 10-15 | Atlanta | 58 | 48 | 10-15 |
| Boston | 58 | 48 | 10-15 | Boston | 58 | 48 | 10-15 |
| Chicago | 58 | 48 | 10-15 | Chicago | 58 | 48 | 10-15 |
| Denver | 58 | 48 | 10-15 | Denver | 58 | 48 | 10-15 |
| Los Angeles | 58 | 48 | 10-15 | Los Angeles | 58 | 48 | 10-15 |
| New York | 58 | 48 | 10-15 | New York | 58 | 48 | 10-15 |
| San Francisco | 58 | 48 | 10-15 | San Francisco | 58 | 48 | 10-15 |
| Toronto | 58 | 48 | 10-15 | Toronto | 58 | 48 | 10-15 |
| Washington | 58 | 48 | 10-15 | Washington | 58 | 48 | 10-15 |

SATURDAY'S FORECAST — CHANDEL: Slight. FRANKFURT: Fair. TUESDAY: 17-21. LONDON: Cloudy. TUESDAY: 17-21. MADRID: Fair. TUESDAY: 17-21. NEW YORK: Fair. TUESDAY: 17-21. PARIS: Fair. TUESDAY: 17-21. ROME: Fair. TUESDAY: 17-21. SYDNEY: Fair. TUESDAY: 17-21. TOKYO: Fair. TUESDAY: 17-21. WASHINGTON: Fair. TUESDAY: 17-21. ZURICH: Fair. TUESDAY: 17-21.

PEANUTS



BLONDIE



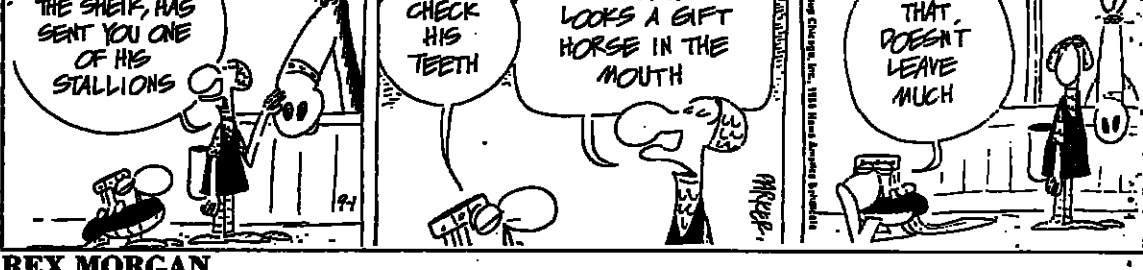
BEETLE BAILEY



ANDY CAPP



WIZARD of ID



REX MORGAN



GARFIELD



Canadian Stock Markets Aug. 31

Prices in Canadian cents unless marked \$

| Toronto | | | | High Low Close Cdn | | | |
|---------------|------|-----|-------|--------------------|------|-----|-------|
| Area | High | Low | Close | Area | High | Low | Close |
| Alcan | 58 | 48 | 10-15 | Bank of Montreal | 58 | 48 | 10-15 |
| Bell | 58 | 48 | 10-15 | Bank of Toronto | 58 | 48 | 10-15 |
| Imperial Oil | 58 | 48 | 10-15 | Canadian Pacific | 58 | 48 | 10-15 |
| Inco | 58 | 48 | 10-15 | Canadian National | 58 | 48 | 10-15 |
| Noranda | 58 | 48 | 10-15 | Canadian Tire | 58 | 48 | 10-15 |
| Papier | 58 | 48 | 10-15 | Canadian West | 58 | 48 | 10-15 |
| Placer Dome | 58 | 48 | 10-15 | Canadian Zinc | 58 | 48 | 10-15 |
| Quebecor | 58 | 48 | 10-15 | Canadian Copper | 58 | 48 | 10-15 |
| Seaboard | 58 | 48 | 10-15 | Canadian Nickel | 58 | 48 | 10-15 |
| Shawmut | 58 | 48 | 10-15 | Canadian Silver | 58 | 48 | 10-15 |
| St. Lawrence | 58 | 48 | 10-15 | Canadian Gold | 58 | 48 | 10-15 |
| Union Pacific | 58 | 48 | 10-15 | Canadian Platinum | 58 | 48 | 10-15 |
| Westbank | 58 | 48 | 10-15 | Canadian Palladium | 58 | 48 | 10-15 |
| Windsor | 58 | 48 | 10-15 | Canadian Rhodium | 58 | 48 | 10-15 |
| Yukon | 58 | 48 | 10-15 | Canadian Iridium | 58 | 48 | 10-15 |

Amsterdam

Close Prev.

| Area | Close | Prev. |
|------|-------|-------|
| ABN | 295 | 295 |
| ABN | 295 | 295 |
| ABN | 295 | 295 |
| ABN | 295 | 295 |
| ABN | 295 | 295 |
| ABN | 295 | 295 |
| ABN | 295 | 295 |
| ABN | 295 | 295 |
| ABN | 295 | 295 |
| ABN | 295 | 295 |

Other Markets Aug. 31

Closing Prices in local currencies

| Johannesburg | | | | London | | | |
|---------------|-------|-------|--------|--------------------|-------|-------|--------|
| Area | Close | Prev. | Change | Area | Close | Prev. | Change |
| Alcan | 58 | 48 | 10-15 | Bank of Montreal | 58 | 48 | 10-15 |
| Bell | 58 | 48 | 10-15 | Bank of Toronto | 58 | 48 | 10-15 |
| Imperial Oil | 58 | 48 | 10-15 | Canadian Pacific | 58 | 48 | 10-15 |
| Inco | 58 | 48 | 10-15 | Canadian National | 58 | 48 | 10-15 |
| Noranda | 58 | 48 | 10-15 | Canadian Tire | 58 | 48 | 10-15 |
| Papier | 58 | 48 | 10-15 | Canadian West | 58 | 48 | 10-15 |
| Placer Dome | 58 | 48 | 10-15 | Canadian Zinc | 58 | 48 | 10-15 |
| Quebecor | 58 | 48 | 10-15 | Canadian Copper | 58 | 48 | 10-15 |
| Seaboard | 58 | 48 | 10-15 | Canadian Nickel | 58 | 48 | 10-15 |
| Shawmut | 58 | 48 | 10-15 | Canadian Silver | 58 | 48 | 10-15 |
| St. Lawrence | 58 | 48 | 10-15 | Canadian Gold | 58 | 48 | 10-15 |
| Union Pacific | 58 | 48 | 10-15 | Canadian Platinum | 58 | 48 | 10-15 |
| Westbank | 58 | 48 | 10-15 | Canadian Palladium | 58 | 48 | 10-15 |
| Windsor | 58 | 48 | 10-15 | Canadian Rhodium | 58 | 48 | 10-15 |
| Yukon | 58 | 48 | 10-15 | Canadian Iridium | 58 | 48 | 10-15 |

Tokyo

Close Prev.

| Area | Close | Prev. |
|---------------|-------|-------|
| Alcan | 58 | 48 |
| Bell | 58 | 48 |
| Imperial Oil | 58 | 48 |
| Inco | 58 | 48 |
| Noranda | 58 | 48 |
| Papier | 58 | 48 |
| Placer Dome | 58 | 48 |
| Quebecor | 58 | 48 |
| Seaboard | 58 | 48 |
| Shawmut | 58 | 48 |
| St. Lawrence | 58 | 48 |
| Union Pacific | 58 | 48 |
| Westbank | 58 | 48 |
| Windsor | 58 | 48 |
| Yukon | 58 | 48 |

Singapore

Close Prev.

| Area | Close | Prev. |
|---------------|-------|-------|
| Alcan | 58 | 48 |
| Bell | 58 | 48 |
| Imperial Oil | 58 | 48 |
| Inco | 58 | 48 |
| Noranda | 58 | 48 |
| Papier | 58 | 48 |
| Placer Dome | 58 | 48 |
| Quebecor | 58 | 48 |
| Seaboard | 58 | 48 |
| Shawmut | 58 | 48 |
| St. Lawrence | 58 | 48 |
| Union Pacific | 58 | 48 |
| Westbank | 58 | 48 |
| Windsor | 58 | 48 |
| Yukon | 58 | 48 |

Stockholm

Close Prev.

| Area | Close | Prev. |
|---------------|-------|-------|
| Alcan | 58 | 48 |
| Bell | 58 | 48 |
| Imperial Oil | 58 | 48 |
| Inco | 58 | 48 |
| Noranda | 58 | 48 |
| Papier | 58 | 48 |
| Placer Dome | 58 | 48 |
| Quebecor | 58 | 48 |
| Seaboard | 58 | 48 |
| Shawmut | 58 | 48 |
| St. Lawrence | 58 | 48 |
| Union Pacific | 58 | 48 |
| Westbank | 58 | 48 |
| Windsor | 58 | 48 |
| Yukon | 58 | 48 |

Zurich

Close Prev.

| Area | Close | Prev. |
|---------------|-------|-------|
| Alcan | 58 | 48 |
| Bell | 58 | 48 |
| Imperial Oil | 58 | 48 |
| Inco | 58 | 48 |
| Noranda | 58 | 48 |
| Papier | 58 | 48 |
| Placer Dome | 58 | 48 |
| Quebecor | 58 | 48 |
| Seaboard | 58 | 48 |
| Shawmut | 58 | 48 |
| St. Lawrence | 58 | 48 |
| Union Pacific | 58 | 48 |
| Westbank | 58 | 48 |
| Windsor | 58 | 48 |
| Yukon | 58 | 48 |

SPORTS

Sukova Upsets Jordan Early; Arias Also Falls in U.S. Open

Compiled by Our Staff From Dispatches

NEW YORK — Helena Sukova of Czechoslovakia upset Kathy Jordan, 6-3, 6-3, on Friday to reach the second round of the U.S. Open tennis championships. In the first round, Sukova, 21, defeated Jordan, 24, in a 45-minute match.

"I played her half a year ago and she just smashed off the court," Sukova said, referring to a 6-3, 6-0 upset at Dallas. "I couldn't win her serve that time. I've been working real hard for the Open the last two weeks. My coach came over from Prague. I felt my game was pretty good. I wanted to go out there and try my best and fight for every point."

Pam Shriver, the fourth seed, and 15th-seeded Barbara Potter won in straight sets to reach the third round.

Gene Mayer, meanwhile, beat his old Davis Cup teammate, sixth-seeded Jimmy Arias, 6-4, 6-2, 6-3, making Arias the first seeded man's player to be eliminated from the tournament.

"I thought I had a good game planned," Mayer said. "We've practiced quite a bit, played Davis Cup together, so I know his game. But not having played him in a match before, I didn't know quite what to expect."

Mayer, whose best showing in nine previous U.S. Opens was a quarterfinal loss to John McEnroe in 1982, repeatedly rushed the net while Arias, a semifinalist a year ago, remained at the baseline. (AP, UPI)

Gerulaitis, Out of Doldrums, Gains 3d Round

By Roy S. Johnson

New York Times Service

NEW YORK — Last year, Vitas Gerulaitis was out of shape. He was out of money, which, he said, came the primary reason that he "couldn't play competitive tennis. Despite any real success in major tournaments. Several embarrassing losses forced him out of the top 10 ranking for the first time since 1977."

His bankroll is now solid again, and so, it appears, is his game. The 27-year-old Gerulaitis routed Gianni Occhipio of Italy on Thursday, 6-1, 6-4, 6-0, to advance to the third round.

"I was in a hole for a little while," Gerulaitis said, talking about his finances. "I had a few ill-estate deals that didn't come through. I'm out of the woods now. I don't have to play just to make my money."

Without that pressure, Gerulaitis again playing with the kind of abandon that made him a favorite among New York fans. With his blood shoulder-length and flowing, he dispatched Occhipio with such ease that he startled himself. "Yeah, sometimes I'd hit a shot that I couldn't believe," he said. "I was really surprised how my game just came all together because at Wimbledon I was playing OK but not great."

McEnroe, top seeded here and ranked No. 1 in the world, lost a first-round match to Vijay Amritraj last Tuesday in the Association

of Tennis Professionals championship at Mason, Ohio.

There has been speculation recently about the possibility of Navratilova facing a man in a match. The name most mentioned has been McEnroe, but he refuses to agree to it. On Thursday, Derek Tarr, a 25-year-old left-hander from South Africa, was unwittingly involved when Gerulaitis said he would "bet his house" that the No. 10-ranked male player could beat Navratilova. Tarr is currently ranked 100th by the ATP computer.

After defeating Leand, Navratilova said: "Well, I'll tell you what. He could be a pretty good player. If I got to pick the surface and the number one hundred guy, I think I'd have a shot at it."

Lloyd felt differently. "I agree with Vitas," she said. "I think she'd lose to the top hundred guy. You can't compare Martina or any of the women to the men. I play my brother. He beats me, and he's not even ranked. There are so many top college players out there that you don't even consider."

As far as excitement, the day's most wrenching match involved 10th-seeded Eliot Teltscher. He defeated Mark Dickson, last year's surprising quarterfinalist, 3-6, 6-4, 2-6, 6-3, 7-6.

Rosie Casals, who is 33 years old, was eliminated by someone less than half her age, 15-year-old Melissa Gurney.

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Pete Rose, player-manager of the Reds, sliding home safely as Jose DeLeon, the Pirates' pitcher, looks on. Rose ran home on a wild pitch by DeLeon during the Reds' 4-1 victory.

Blue Jays Rally to Top White Sox, 4-3, Overcoming Seaver With 2 Outs in 9th

United Press International

CHICAGO — Tom Seaver, just one strike from victory, was unable to hold the lead in the ninth inning as Lloyd Moseby's two-run pinch single capped a three-run rally that lifted the Toronto Blue Jays to a 4-3 victory Thursday over the Chicago White Sox.

Moseby's bloop hit to shallow left field with two out scored George Bell and pinch-runner Rick Leach.

Willie Upshaw singled with one out in the ninth and went to third on a wild pitch.

BASEBALL ROUNDUP

on Bell's single. Willie Aikens singled in Upshaw and the runners advanced to second and third on an infield out. Moseby, batting for Jesse Barfield, then blooped a single to the opposite field.

Seaver has 12 victories but he has pitched well enough to be approaching the 20-victory mark. On Thursday night, Seaver's luck turned sour again as the White Sox stranded 14 runners and backed him with only three runs.

Red Sox 9, Twins 3

In Minneapolis, Wade Boggs and Dwight Evans each had three hits, and Al Nipper pitched a six-hitter to lead Boston over Minnesota, 9-3. Boggs singled in two runs, and Evans singled in another in a four-run fourth.

Mariners 2, Tigers 1

In Seattle, Jack Perconte circled the bases on a punt as throwing errors by Jack Morris and Kirk Gibson allowed Seattle to score

two unearned runs in the eighth to beat Detroit, 2-1.

Rangers 4, Royals 3

In Kansas City, Missouri, Buddy Bell singled in one run and scored another on Pete O'Brien's triple in the first inning to back Charlie Hough's seven-hit pitching and lead Texas over Kansas City, 4-3.

The Rangers jumped in front, 2-0, in the first when Billy Sample walked, stole second and scored on Bell's single and Bell scored on O'Brien's triple.

Brewers 7, Indians 6

In Milwaukee, Mike Jeffcoat's wild pitch with one out in the eighth inning allowed the winning run to score and failed a five-run comeback by Cleveland as Milwaukee beat the Indians, 7-6.

Cubs 8, Braves 3

In the National League, at Atlanta, Keith Moreland singled in two runs to highlight a five-run 10th inning that gave the Cubs their fifth straight victory, an 8-3 triumph over Atlanta. Eleven Cubs batted in the 10th, with Bob Denner's infield hit leading it off against reliever Gene Garber (2-4).

Expos 5, Dodgers 2

In Montreal, Dan Driessen drove in four runs with a three-run homer and a double, and the Expos snapped a six-game losing streak with a 5-2 victory over Los Angeles.

Reds 4, Pirates 1

In Cincinnati, Cesar Cedeno and Ron Oester doubled during a four-run third inning to help the Reds snap a five-game losing streak with

a 4-1 victory over Pittsburgh. Jay Tibbs raised his record to 3-2, and Jose DeLeon fell to 6-12.

Giants 6, Phillies 5

In Philadelphia, Jeff Leonard hit a two-run homer with none out in the ninth inning to lift the Giants to a 6-5 triumph over Philadelphia in the opener of their doubleheader.

Joel Youngblood led off the ninth with a single, and Leonard hit his 21st home run. Mike Schmidt hit his 29th home run in the nightcap.

Mark Davis walked pinch hitter Sixto Lezcano with the bases loaded and one out in the ninth to lift the Phillies to a 6-5 victory.

11 NFL Teams to Begin With New Quarterbacks As Season Starts Sunday

United Press International

NEW YORK — When in doubt, change the quarterback. That seems to be the theme as the National Football League opens its regular season Sunday.

Of the 27 contenders attempting to stop the Los Angeles Raiders from joining Pittsburgh as the league's only four-time Super Bowl champion, 11 will have different players calling signals than the quarterbacks who opened last season. And only one team, Kansas City, was forced to change because of injury.

The biggest quarterback turnover took place in the AFC Central Division, where three of the four clubs will have new quarterbacks this season. David Woodley, acquired from Miami in a trade, takes over for the retired Terry Bradshaw at Pittsburgh; Warren Moon, who ended a bidding war by choosing Houston, takes over for the Oilers; and at Cleveland, Paul McDonald replaces Brian Sipe, who left for the United States Football League.

In the AFC East, Dan Marino, who took over as a starter for Woodley in the sixth game of last season, has become a fixture at quarterback for the Dolphins. The New York Jets traded away Richard Todd to New Orleans and named untested Ken O'Brien as his replacement. O'Brien is now being replaced by Pat Ryan because of O'Brien's current involvement in an assault trial.

In the AFC West, an injury to Bill Kenney has forced Kansas City to go with second-year man Todd Blackledge. Dave Krieg, who displaced Jim Zorn last season and led Seattle to the AFC title game, has the job again this year.

There will be four quarterback changes in the NFC, with the biggest taking place in Dallas. Danny White, who threw for a club record 29 touchdowns last season, has been ousted in favor of Gary Hogeboom.

Gary Danielson has beaten out Eric Hipple at Detroit, and Todd

has bumped his close friend Ken Stabler to a backup role in New Orleans. Phil Simms, pushed into a reserve role by Scott Brunner last season, is back as No. 1 quarterback for the New York Giants.

Oddsmakers' Choices

Here are the odds from Harrah's Reno Race & Sports Book, with home teams in bold:

Sunday

New Orleans 6 over Atlanta Washington 4½ over Miami San Diego 3 over Minnesota Giants 2 over Philadelphia Pittsburgh 6½ over Kansas City San Francisco 2½ over Detroit Chicago 6 over Tampa Bay Green Bay 3 over St. Louis New England 2½ over Buffalo Denver 1½ over Cincinnati Jets 1½ over Indianapolis Raiders 6 over Houston Monday

Seattle 5 over Cleveland Rams 1 over Dallas (AP)

Raiders, 49ers Picked to Play In Super Bowl

The Associated Press

NEW YORK — The Los Angeles Raiders and the San Francisco 49ers have been picked to meet in the Jan. 20 Super Bowl XIX in a nationwide poll of the Pro Football Writers of America. The Raiders were chosen to repeat as Super Bowl champions.

Miami was picked as the runner-up to Los Angeles in the American Conference, and Washington was second in San Francisco in the National Conference.

The voters picked Joe Montana, 49ers' quarterback, as the favorite to win the group's trophy as the National Football League's most valuable player.

Friendship Games Close in Fanfare As Soviet Defends Olympic Boycott

The Associated Press

MOSCOW — The Friendship 84 Games have ended with 4½ trumpeting their sporting achievements and taking a final bow at the Olympic Games they turned.

The Soviet Union scored a final triumph Thursday by winning the basketball championship. The Soviet Olympic Committee, Marat Gramov, pronounced the Games more successful than the Olympics.

At a closing ceremony in Moscow's Rossiya Hotel, Gramov reiterated that the Soviet Union and 14 other countries, mostly its Eastern allies, were right not to go to the Olympics.

"Boundless commercialization" characterized the Summer Games, told an invited audience. Speeches of the boycott, he said. "The atmosphere of Los Angeles once again proved the correctness of the decision."

Vanya Dermedzhieva, a woman basketball player from Bulgaria, said: "In all aspects, Friendship 84 surpassed Los Angeles."

After the speeches, the audience

rose to watch a film of the Friendship 84 flame at Lenin stadium burning out. The flame was lit in an Olympic-style opening ceremony on Aug. 18 in the same stadium where the 1980 Moscow Olympics were opened. The ceremony launched two weeks of competition in nine sports.

Competition was held in several communist countries, including Cuba, site of the boxing tournament.

Though the Russians insisted that their Games were not meant to rival the Olympics, Gramov said that Friendship athletes had set 18 world records, compared to 11 at Los Angeles.

There were some disappointments. The Soviet swimmer Vladimir Salnikov failed to beat his own world records in the 400 meters and 1,500 meters. But he beat the Olympic gold medal times.

East Germany, whose athletes were said by other competitors to be bitterly disappointed at missing the Olympics, won 16 swimming events.

The Russians dominated in most other sports, sweeping aside all op-

position in field hockey, track and field, gymnastics and basketball.

Nothing like Olympic fever was generated by the Games, although Moscowites were enthusiastic spectators, and television showed hours of competition throughout the day.

A few athletes emerged as stars. The East German schoolgirl Sylvia Gerasch broke the world record in the 100-meter women's breaststroke. Her competitors also broke two relay marks, swimming the 4 x 100-meter freestyle in 3:42.41 and the 4 x 100-meter medley in 4:03.69.

The Soviet swimmer Sergei Zubov was the only man to break a world record, clocking Rick Carey's mark of 1:58.93 to 1:58.41 in the 200-meter backstroke.

No world records fell in track and field, but 23 performances would have gained medals at the Olympics. All but three were in field events, a traditional strength of the East bloc.

As for the next Olympics, to be held in Seoul, the Russians are not saying if they will attend. Gramov said that no decision has to be made until six weeks before the Games.

The Russians dominated in most other sports, sweeping aside all op-

Virdon Dismissed by Expos; Fanning Named as Manager

United Press International

MONTREAL — Bill Virdon has been dismissed as manager of the Montreal Expos and replaced by his predecessor, Jim Fanning.

"Bill came to me several days ago and told me that he was not interested in continuing his managerial career beyond this season," John McHale, the team president and general manager, announced Thursday. "With this in mind, I met with the board of directors and it was determined that it was in everyone's best interest that a change be made at this time. I asked Jim [Fanning] to come in and do a relief job."

"He was excited about it, and at this time I can't say he won't be here next year. But for the time being I want him to win as many games as he can."

The 53-year-old Virdon, in his 13th year as a major-league skipper, was known to be a laid-back manager who let his teams play. Many observers felt that the Expos had the potential to win the Na-

tional League East. But the Expos are in fifth place this season with a 64-67 record, 14½ games out of first place.

"I've had a lot of tough years as manager and this has been one of them," said Virdon, in his second season with Montreal. "I don't anticipate managing again. I know I won't manage next year but I've been involved in baseball for 34 or 35 years. So I guess, somehow, I'll get involved in it again."

Virdon was named Montreal manager on Oct. 12, 1982. He earned a reported \$100,000 and had a 146-147 record over two seasons with the Expos. He previously managed the Pittsburgh Pirates, New York Yankees and Houston Astros.

The 56-year-old Fanning, first took over as manager of the Expos on Sept. 8, 1981, and guided the club to its only division title — in the strike-shortened split season. He remained at the helm through the following season.

Kuhn's Order: Cubs Keep Sunshine But Forfeit Home-Field Advantage

Washington Post Service

NEW YORK — The baseball commissioner, Bowie Kuhn, has handed down the following orders regarding possible postseason play at Wrigley Field in Chicago, a subject that has caused much controversy because the stadium lacks lighting for nighttime play:

• No lights in Wrigley Field, temporary or permanent.

• No change in the National League playoff schedule.

• No Chicago Cubs postseason home games played in other teams' parks.

• No major concessions to the preferences of network television or demands by owners of other teams who would share in the television revenue.

• One night game in the World Series schedule.

Kuhn has decided that if the Cubs make it to the World Series, then the home-field advantage will switch to the American League. This means that Games 3, 4 and 5 (on a Friday, Saturday and Sunday) will be scheduled for Wrigley Field, rather than Games 1, 2, 6 and 7, as originally planned. Since the two weekend games would have been played in the daytime anyway, only the Friday night game would have to be rescheduled.

The National League playoffs will not be changed from their original schedule. This means that if the Cubs finish atop the National League East, then the first two games will be played in the sunshine at Wrigley Field on Oct. 2 and 3, a Tuesday and Wednesday.

"We have reduced the loss by changing the World Series schedule," Kuhn said of the potential television revenue, "but the loss will still be very substantial." An educated guess is that Kuhn's solution will cost baseball owners between \$3 million and \$4 million. Perhaps, \$175,000 a team.

NCAA Unit Urges New Academic Rule

The Associated Press

WASHINGTON — The head of a special National Collegiate Athletic Association committee has recommended changing the rule that sets strict academic qualifications for first-year students in college sports because a new study indicates that the rule discriminates against blacks.

Under the rule, adopted last year to take effect in 1986, first-year eligibility would require a 2.0 (out of 4.0) average in basic high school subjects such as English, math and science and minimum scores of 700 (out of 1,600) on the standard Scholastic Aptitude Tests for college admission or 15 (out of 36) on American College Tests.

The study, commissioned by the NCAA's Special Committee on Academic Research and released Thursday, said that while only 15 percent of all students do not achieve those scores, the failure rate is twice as high for black students.

Gwendolyn Norrell, who headed the committee, said the rule "simply discriminates against a large proportion of our athletes in this country — black athletes — and I personally think we're going to have to modify it."

Athletes forced by academic standards to spend their first year at college primarily in the classroom instead of on the playing field are less likely to be awarded athlet-

ic scholarships and thus more likely to be denied a college education, Norrell said.

The study looked at high school and college academic records of more than 16,000 student-athletes who were enrolled as first-year students in 1977 and 1982.

Of those admitted in 1977, 69 percent of the black males had standardized test scores too low to qualify to play sports in their first year, although 54 percent of them eventually were graduated.

This showed the researchers that the standardized test scores were not a good way of predicting who should sit out their first year of college.

SCOREBOARD

Tennis

U.S. Open Results

MEN

Second Round

Gene Mayer, U.S., def. Jimmy Arias (6), 6-4, 6-2, 6-3.

Ivan Lendl (2), Czechoslovakia, def. Eddie Edwards, South Africa, 7-5 (7-3), 6-3, 6-1.

Steve Netherland (4), Sweden, def. Michael Kruze, U.S., 7-5 (7-3), 6-3, 6-4.

Andre Gornes (5), Ecuador, def. Mike Bauer, U.S., 6-4, 6-3, 6-2.

Arnes Kristensen (8), U.S., def. Jeff Kierdorf, U.S., 6-4, 6-3, 7-6 (7-5).

Eliot Teltscher (10), U.S., def. Mark Dickson, U.S., 3-6, 6-4, 2-6, 6-3, 7-6 (7-5).

Vitas Gerulaitis (12), U.S., def. Gianni Occhipio, Italy, 6-1, 6-4, 6-0.

Anders Jorved (14), Sweden, def. Donnie Visser, South Africa, 6-7 (5-7), 6-3, 3-6, 7-6 (7-5), 6-4, 6-2.

Pat Cash (18), Australia, def. Brad Gilbert, U.S., 6-4, 6-2, 6-3.

Brad Drewett, Australia, def. Scott Davis, U.S., 6-4, 6-3, 6-2.

Tommy Ho, U.S., 6-4, 6-3, 6-2.

Shelton Simonson, Sweden, 6-3, 6-1, 7-6 (7-5).

Greg Holmes, U.S., def. Thomas Hoosted, Sweden, 6-2, 6-4, 7-6 (7-5).

Tennis

U.S. Open Results

WOMEN

Helen Sukova, Czechoslovakia, def. Kathy Jordan (5), U.S., 6-3, 6-3.

Pam Shriver (4), U.S., def. Wendy White, U.S., 6-3, 6-2.

Barbara Potter (15), U.S., def. Sandy Collins, U.S., 6-3, 6-2.

Martina Navratilova (1), U.S., def. Andrea Leand, U.S., 6-4, 6-3.

Crista Everett (12), U.S., def. Terry Holladay, U.S., 6-1, 6-1.

Hana Mandlikova (3), Czechoslovakia, def. Tina Scheuer-Larsen, Denmark, 6-3, 6-2.

Zina Garrison (7), U.S., def. Ralston Rapp, Italy, 3-6, 6-4, 6-3.

Brenda Gunning (12), U.S., def. Pam Cunniff, U.S., 2-6, 6-3, 6-4.

Andrea Temesvari (14), Hungary, def. Elise Baurle, U.S., 7-6, 6-4.

Jenny Brown, U.S., def. Steve Darden, U.S., 6-4, 6-2, 7-5 (7-3).

Tim Mayotte, U.S., def. Leo Papp, Finland, 6-4, 6-3, 6-1.

Bill Scanlon, U.S., def. Marlie Davis, U.S., 6-4, 6-3, 7-6 (7-5).

Ken Flach, U.S., def. Vilij Amritraj, India, 6-2, 7-6, 6-1.

Jenny Brown, U.S., def. Steve Darden, U.S., 6-4, 6-2, 7-5 (7-3).

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Ken Flach, U.S., def. Vilij Amritraj, India, 6-2

ART BUCHWALD

America the Greatest

WASHINGTON — The following conversation was overheard in a Dallas bar at 2 o'clock in the morning during the recent Republican convention.

"You know what makes America great?"

"What?"

"It's being able to turn on your TV set and listen to a politician tell you how great America really is."

"I'll tell you what makes America great. It's winning a gold medal at the Olympics and thinking President Reagan, even if he didn't have a darn thing to do with it."

"Nah, that's not what makes America great. What makes America great is the American family."

"Whose family?"

"My family."

"I'm divorced. I'm supporting two families."

"That's my point. Only in America are we rich enough to support more than one family at a time."

"It wasn't my idea. It was the judge's."

"Right, that's because we have justice for all."

"I wouldn't say that. He took her side against mine. What kind of justice is that?"

"The greatness of our country is that no matter how rich or how poor you can always appeal an injustice."

"You tried to hire a lawyer later?"

"Forget your personal problems. I'll tell you what makes America great."

It's living in a Christian country.

"I'm not a Christian."

"Well then, it's living in a Judeo-Christian country."

"I'm not Judeo. I'm Voodoo."

"That's exactly what I said. What makes America great is living in a Judeo-Christian-Voodoo country — where you can practice the faith of your choice whether in a school, a church or at an airport."

"How about this? What makes America great is that you can be outraged at Miss America posing in the nude for Penthouse magazine, but nobody can stop me from buying it at the newsstand, just to see what all the fuss is about."

"I just thought of one. What's great about America is we can get our clothes whiter than any country in the world."

"And according to Cliff Robertson, ATAT is working twice as hard to gain our trust."

"I'll tell you what is great. Our children, who will be the future leaders of America."

"Not to mention our women. They're really great."

"And getting greater all the time."

"You better believe it."

"Let's not forget the minorities who want their share of the greatness of America."

"No one would forget them in an election year."

"At the same time we do have faults."

"That in itself is the great thing about America. We recognize our faults and have the ability to correct them without endangering our national security."

"Or shortchanging the people on the bottom of the ladder."

"I'll tell you another thing that's great about America. The Dallas Cowboys."

"What's so great about the Dallas Cowboys?"

"They're America's team."

"I hate the Dallas Cowboys."

"That's what I mean. You can either love them or hate them, and as long as you don't live in Dallas no one is going to arrest you."

"Well, it's been great talking to you."

"It's been great talking to you — but not nearly as great as talking about America."

3d-Century Sculpture Found in Pisa Canal

The sandstone sculpture was probably part of decorations in the ancient monastery of St. Concord, which is now a ruin, officials said. They said it would be exhibited in Pisa's St. Matthew Museum.

"I'll tell you another thing that's great about America. The Dallas Cowboys."

"What's so great about the Dallas Cowboys?"

"They're America's team."

"I hate the Dallas Cowboys."

"That's what I mean. You can either love them or hate them, and as long as you don't live in Dallas no one is going to arrest you."

"Well, it's been great talking to you."

"It's been great talking to you — but not nearly as great as talking about America."

Nikola Tesla, a Bizarre Genius, Is Getting His Due

By William J. Broad
New York Times Service

NEW YORK — The world of science is belatedly recognizing one of its most important, eccentric and enigmatic inventors, Nikola Tesla.

A century after he arrived penniless on the docks of New York City, Tesla is receiving credit for achievements that outdist those of his contemporaries, Thomas Edison and Guglielmo Marconi. And more than 40 years after the reclusive died in a Manhattan hotel room, in the company of the pigeons who were his favorite companions in the final years of his life, he is being elevated to the pantheon of the world's great inventors.

It was Nikola Tesla, not Marconi, who invented the first radio; it was Tesla, not Edison, who devised the system of electric power distribution now used throughout the world. Working in small laboratories in midtown Manhattan and Greenwich Village, Tesla invented the polyphase electric motor, the bladeless steam turbine and the radio-guided torpedo.

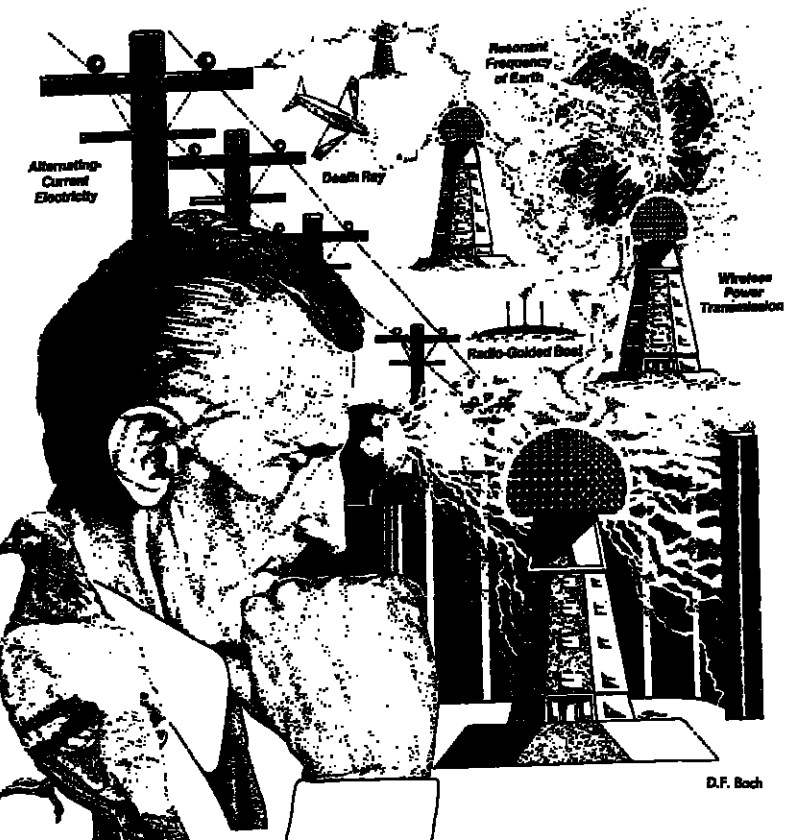
To help publicize the accomplishments of the enigmatic genius, a group of scientists and engineers have formed the Tesla Centennial Committee and recently held a symposium, organized an exhibition and persuaded the governor of Colorado to dedicate August to Tesla. "He helped spawn the industrial revolution," said Toby Grotz, chairman of the Tesla Centennial Committee and an engineer at Martin Marietta Aerospace in Denver.

Tesla was born in 1856 in Croatia, then part of the Austro-Hungarian Empire, and soon showed a talent for tinkering. In 1884, he took a ship to New York and went to work for Edison, but they parted after a dispute over an invention.

Going into business for himself, Tesla developed the basis for the alternating-current system. To make the system practical, he patented a variety of alternating-current generators, transformers and motors.

So much for Tesla's conventional history. The centennial committee says he went on to do much more — envisioning and inventing a dazzling array of futuristic devices. "All the literature says Marconi invented the radio," Grotz said. "But long before Marconi had a patent, Tesla was demonstrating a radio-controlled model boat and talking about transmitting electrical power across the Atlantic. Compare that to Marconi's S-O-S."

Another example is radar, which employs short wavelength radio signals that can be reflected back from solid objects. As early as 1900, members of the centennial committee note, Tesla suggested that these wavelengths could be used for locating ships at sea.



D.F. Bach

Many of the 27 speakers at the Tesla symposium, held at Colorado College in Colorado Springs, put their emphasis on Tesla's spectacular experiments at a laboratory not far from the symposium site. There, at the turn of the century, Tesla built enormous coils that generated 10 million to 12 million volts of electricity and sent bolts of artificial lightning flashing 135 feet through the air, although to this day scientists debate what Tesla accomplished, for much of the work was shrouded in mystery.

Margaret Cheney in her book, "Tesla, Man Out of Time," details some of his eccentricities. At the height of his fame, while eating dinner in the Palm Room of the Waldorf-Astoria Hotel in New York, he would polish the already sparkling silver and crystal using exactly 18 napkins. He had a phobia about germs and a love of numbers divisible by three.

After the death of his mother, Tesla became increasingly eccentric and withdrawn. He never married. Nearly every day he would go to Bryant Park behind the New York Public Library and feed his friends, the pigeons. Late in life he claimed that he had received signals from distant planets.

One testimonial to his genius did come in 1917 from B.A. Behrend, an engineer who had not taken of Tesla's work. "We were to eliminate from our industrial world the results of his work," he told a banquet in Tesla's honor. "The wheels of industry would cease to turn, our electric cars and trains would stop, our towns would be dark, our mills would be dead and idle. His name marks an epoch in the advance of electrical science. From his work has sprung a revolution."

Tesla's laboratory in Colorado Springs was a barn-like structure that sat atop a hill on the prairie and was crowned by an 80-foot (24-meter) tower and beyond that a 122-foot mast. The tall fence surrounding it carried signs reading: "Keep Out — Great Danger." The claps of thunder from his bolts of artificial lightning could be heard for miles.

According to Charles Wright, a retired engineer formerly with the Public Service Co. of Colorado, the laboratory was filled with a host of inventions including high-voltage transformers, dynamos, coils, capacitor-discharge devices, oil-insulated capacitors and a large metered control panel. In Colorado Tesla hit upon what he

thought was a revolutionary way to send electricity through the air. "Not only was it practicable to send telegraphic messages to any distance without wires," he wrote of the insight, "but also to impress upon the entire globe the faint modulations of the human voice, far more still, to transmit power, in unlimited amounts, to any terrestrial distance and almost without any loss."

With the financial backing of J.P. Morgan, Tesla embarked upon a plan to commercialize the discovery, building a 200-foot tower at Shoreham on Long Island. By 1905, however, Morgan had abandoned the project and the tower was never completed.

Tesla, especially in later years, was a man of extraordinary idiosyncrasies and boastful declarations that sometimes sent his science peers into a rage. With a pocket-size vibrator, he once told reporters, he could generate resonant tremors that would split the earth in two. He gave its resonant frequency as one hour and 49 minutes. Whatever the plausibility of his earth-splitting scheme, the rather precise estimate of Earth's frequency turned out to be close to the mark, as was demonstrated during the great Chilean earthquake of 1960, when geophysicists were able to measure the time it took waves to travel back and forth through the Earth.

At the symposium some of Tesla's advocates seemed to try to outdo the master's knack for hyperbole as they conjured visions of death rays and futuristic weapons. In a paper entitled "Star Wars Now!" Thomas E. Bearden, a retired nuclear engineer and army war games analyst, noted what he said were a number of designs for making weapons based on Tesla's more exotic ideas. The hypothetical devices included what he termed a Tesla howitzer and a Tesla shield that could allegedly stop Soviet missiles.

Tesla suggested in 1940 that the United States military could build a system of death rays that would melt enemy airplanes at a distance of 250 miles (400 kilometers). The War Department looked into the idea and said politely, no thanks.

"If Tesla you're always going to get the fringe," said Robert K. Golka, a physicist who spoke at the symposium. "It's hard to tell what is real and what is not. Tesla will always attract guys with ideas about perpetual motion."

Tesla's closest living relative, William H. Terbo, a great-nephew, says that four basic types of people are attracted to Tesla — serious scientists, Yugoslavians proud of his achievements, pseudoscientists who pursue some of his wackier ideas and cultists who worship him as an extraterrestrial.

"There are religious fanatics in Pasadena who say he came down from Mount Venus," said Terbo. "It's no small group."

PEOPLE

Lennon Memorabilia Tops Beatles Auction

An unpublished manuscript by John Lennon led the bidding in a sale of Beatles memorabilia. Sotheby's auction house in London. Everything from a guitar postcard came under the hammer. The manuscript, 16 pages of handwritten poetry and prose written when he was a struggling musician in Liverpool, went for £17,600 (about \$23,000), and an American businessman paid £16,050 for one of Lennon's guitars. Sotheby's took in £207,497.

Dan Koko, a stuntman, pocketed \$1 million Thursday by jumping 326 feet (about 100 meters) from atop the Vegas World Hotel Casino in Las Vegas, Nevada, and landing in an airbag. Koko, a native of a Cherokee, North Carolina, Indian reservation, landed on his back and emerged from the 20-foot-high airbag with only a rip in his jump suit. The \$1 million in cash was given to Koko by Vegas World's owner, Bob Sapp. Sapp said he made the offer because of the publicity and because Koko was defying death to make the jump.

Stacy Chinin, 23, has become the first swimmer to circle Manhattan three times, eating bananas-and-honey sandwiches and pasta and listening to "mellow rock" music as she swam 84 miles (135 kilometers). "I did it!" she shouted when she emerged from the East River at 9:30 P.M. Wednesday, 33½ hours after beginning her swim. The University of Maryland senior from Silver Spring became nauseous after swallowing polluted river water, and battled queasiness for 12 hours by consuming watered-down yogurt as she swam.

Who's Who in America spent 18 months looking for five eminent Americans to honor for their achievements, and picked the Chrysler Corp.'s chairman, Lee Iacocca, the writer Malcolm X, the DNA researcher Mervin Lee, the sociologist Robert Merton, and Claude S. Steele, a specialist in information theory. The winners of the first Who's Who in America Achievement Awards each will receive \$10,000.

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